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ARMED FORCES

'Problems of Russian Troops in Georgia'

94UM0060B Moscow TRUD in Russian 28 Oct 93 p 1

[Article by Vladimir Sarishvili]

[Text] As we know, Russian troops have not yet started protecting Georgia's vitally important transportation arteries. An agreement to allocate a contingent of national armed forces to protect the Poti-Kutaisi-Tbilisi-Baku railroad has still not been acted upon.

Major General Vasily Belchenko, the deputy troop commander for personnel of the Group of Russian Forces in the Transcaucasus, commented on this problem and on some other issues relating to the presence of Russian forces in Georgia. "Our mission to draw up a plan to protect the railroads has been completed," he declared. "All that remains now is to wait to receive orders, after which we could begin carrying them out."

When asked to whom the Gudauta military grouping is subordinated, Belchenko replied that it is subordinated not to the Group of Russian Forces in the Transcaucasus but to the central leadership. The major general emphasized that the relations evolving between the Russian and Georgian military are not the best. The living quarters of Russian officers are being seized daily, and thefts are being committed, with the participation of servicemen of the Georgian Ministry of Defense. What is most distressing of all is that these "savage acts of barbarism," as Major General Belchenko referred to them, are being committed by our colleagues, with whom friendship and mutual aid are the only road open to us following the decision to join the CIS. V. Belchenko officially announced that contrary to the assertions of ex-President Gamsakhurdia, Russian forces are not participating in combat activities in Western Georgia. Government forces have the means to handle the mission on their own. This situation could change only in the event that a military agreement is signed: After that, a different policy would be possible in connection with new international obligations.

Replying to the question as to whether Russian forces were providing assistance in establishing national armed forces in Georgia, Belchenko said that Russian specialists would be happy to do so, but that no one has yet made such a request of them.

Spetsnaz Unit: Recruitment, Training

94UM0060B Moscow KRASNAYA ZVEZDA
in Russian 29 Oct 93 p 1

[Article by Oleg Vladyskin: "Grave is the Fate of the Elite: Special Purpose Military Units Have Their Own Special Problems"]

[Text] Do you remember a few years ago when radically predisposed professors concerned for the future of the

society's intellectual elite demanded exemption of students of higher educational institutions from the draft? This concession was adopted with the help of the deputy corps, and later on it was extended even to students of tekhnikums and vocational-technical schools. Since that time and until this day, there has been endless debate on whether the new legal rule has really proven useful to the country's intellectual potential, and on how much damage it has done to the Armed Forces. However, for some reason the fact that the Army also has its own elite is left out of the discussion in such debates. Doesn't it also need human material of high quality, if I may use that expression?

There is every reason to place the brigade under Colonel Yevgeniy Tishin's command among the elite units of the Russian Armed Forces. Its personnel must carry out reconnaissance and special missions deep in the enemy rear in combat conditions. Such military organizations are referred to for short in military jargon as spetsnaz. And of course, everyone has heard that the men serving in them are natural supermen capable of operating without support in absolutely hostile surroundings, and that just of few of them could disorganize command and control of entire divisions, emerging the victors from fights against forces superior several times over.

These aren't just stories. I witnessed spetsnaz troops at work. In tactical exercises, in terms of its effectiveness the work of reconnaissance teams was found to be equivalent to a good artillery raid, or to a raid by an air regiment. Colonel Tishin's subordinates have also had occasion to distinguish themselves.

Five years ago they were carrying out a mission during an exercise in the rear of an air defense corps. Remaining undetected for several days in succession, the scouts were able to monitor exchange of documents between staffs at different levels, they revealed the locations of all units and subunits, they disrupted communication between them, defeated coordination, and began "annihilating" the most important objectives. According to the referees, in a real combat situation the special-purpose reconnaissance teams would have done extremely significant damage to the combat capability of the corps.

Such impressive possibilities of the scouts are of course the result of their unique training. This is something that I feel is important to emphasize. People involved in the training of spetsnaz troops assert that very few young men can be turned into supersoldiers within the short period of compulsory service. Meticulous and very strict selection has always been a preliminary step in elite units. Lads with certain qualities and talents that could be developed to the needed level within 2 years were sought among the conscripts. Today, carrying out such selection is extremely problematic.

"Up until the mid-1980s, brigades like ours received young replacements satisfying the most rigid requirements on future scouts to a level of 80-85 percent."

explained Colonel Tishin. "Now, unfortunately, this indicator is significantly lower."

It stands to reason that the situation that has evolved in the brigade is a general reflection of the manning situation of the Armed Forces. The acute shortage of draftees is affecting all military units. But the problem is aggravated even more in special-purpose units by the fact that the contingent among citizens subject to call-up into the Army that is suited to service in them in all respects has now been minimized.

The main criteria for selection of candidates for spetsnaz troops will probably be news to many readers. As it happens, in an interview with me an officer of the general staff competent in this matter continually emphasized the prime importance of the intellectual qualities of future scouts. In the one and a half year stint of compulsory service required today, any youngster of altogether average development could be "brought up to snuff" in physical respects. But "average brains" are far from always capable of successful mastery of the special training program.

Servicemen who must operate apart from their forces in a combat situation, endure extreme conditions for several days and even weeks while perpetually playing "hide and seek" with enemy counterintelligence, and at critical moments make the sole correct decision in seconds, must clearly possess an above-average mind.

This is why the procedure for testing conscripts to be selected for service in special-purpose reconnaissance units was honed carefully over a period of many years. Their level of general education was tested. At least satisfactory knowledge of some foreign language was a separate requirement. Memory, attention, reactions, the basic instincts of logical thinking, and independence in judgement and decisions were tested. And naturally in all instances a high percentage of those who passed all of the tests well were students of higher education.

Now, these are only memories. Well, an effort to test recruits is still being made, but the problem is that those who are selected with great difficulty are frequently still ill-suited to service in military reconnaissance, if we grade strictly overall. Where is one to turn? The hopes are laid on the educational capabilities of training officers, who are able to hammer together combat-capable subunits even out of an ill-suited contingent. Over the last several years, commanders have adapted themselves to working with recruits who clearly do not shine in wit and, furthermore, who are not in the best of health.

You see, soldiers who are required to conduct reconnaissance deep in the enemy rear have an extreme need for both developed intellectual capabilities and basic physical fitness. Practically every combat mission requires them to carry out a forced march of several dozen kilometers. And if they are able to destroy the enemy objective, they are then able to avoid pursuit only by taking flight—10-15

kilometers at a frenzied pace, their minds working overtime in order to "second-guess" the enemy from the beginning to the very end of an operation.

"Endurance is the main physical quality a spetsnaz soldier must have," explained Major Viktor Poladenko, a graduate student at the Military Institute of Physical Culture who had worked together with me in the brigade. He said that before, when draftees were selected for reconnaissance, the screening was done by measuring anthropometric data. Youngsters less than 175 cm tall and weighing less than 70 kg were not accepted for service in the spetsnaz troops. Priority was generally given to category-rated athletes, chiefly with good "wind": Track and field athletes, pentathletes, skiers, speed skaters, swimmers. And of course, parachute jumpers were selected with pleasure. Experts in single combat of the most diverse styles were felt to be good material.

"It was pleasant just to look at those lads. Athletes, one and all," recalled Poladenko. "Now we have to train spetsnaz soldiers out of other 'material'."

We were talking in the brigade's stadium, where one of the companies happened to be training at the moment. Among the soldiers stripped to the waist, there were none who were obviously puny. Regular physical training had built up their biceps somewhat. But still, over half of the company's soldiers were not distinguished by giant stature—either in height or in the cut of their shoulders.

"Few of them were category-rated athletes prior to being drafted. As a rule, as you yourself know, students of institutions of higher education and vocational-technical schools engage in sports the most actively and consistently. But now our army is a 'workers and peasants' army," the major summed up. "There are of course some strong, thinking lads among these soldiers. But if only the social and demographic range of selection for spetsnaz troops were wider...."

Well, the recent presidential edict will probably widen the contingent from which worthy candidates could be selected for service in the elite units. At least they have now started calling up students into the army again from general educational institutions providing initial and middle-level professional training. Just watch, with time they will also start taking students from the numerous polytechnical and technological institutes having little to do with learning the secrets of the universe. But in the meantime, Brigade Commander Tishin has to settle for whatever replacements they send him. And when he gets recruits who are not fit for service in reconnaissance, he doesn't send them to units with less demanding specializations like before. No one, after all, is going to provide substitutes for the rejects.

"Even as it is, we get fewer recruits than we require," the commander complained. "Consequently if the youngsters of incapable of mastering our very specific training program due to health, psychological qualities or limited

abilities, we assign them to duty as stokers, subsidiary farm workers and other such jobs. Let them swing the shovels, rather than soldiers who are fit for combat training as scouts."

Resorting to such measures out of the lack of any other choices, the brigade commander is at least able to solve some of the daily housekeeping problems of the unit somewhat, which are also extremely troubling. But at the same time he recognizes that in the least, this does nothing for combat readiness. The place of the brigade in combat requires that all of its personnel be fully trained in professional respects, and that all soldiers without exception be able to carry out the missions they are supposed to. However, as a result we now have a whole group of soldiers who are on the personnel roster but who are excluded from the training process and who know little of the life of spetsnaz troops in the field. You would have to stretch the point considerably to call them a military elite.

When in the fall of last year two special-purpose detachments (that would be equivalent to two infantry battalions) had to be sent to one of the "hot spots" on short notice, they virtually had to "scrape the bottom of the barrel" in the brigade to get all of the personnel they needed for the subunits. They managed. It was not until he arrived at his destination that Lieutenant Colonel Sergey Breslavskiy, the commander of one of the detachments, discovered that a good third of the soldiers subordinated to him were lacking in many things, mildly speaking. It took him and his officers two days of intensive training in conditions close to those of combat to teach the detachment's soldiers how to handle their weapons correctly. Yes, the spetsnaz has become accustomed to carrying out missions in all conditions, under all circumstances. One of the many confirmations of this is the more than twenty government decorations presented to the brigade's soldiers for successful fulfillment of this special assignment. But we now know the price that had to be paid! They were expected to be supermen. But it was not until they were in a combat situation that they were taught to handle their weapons. And so, it is perhaps time to stop fostering the false hope that we will be able to nurture a remarkable intellectual elite at the expense of devastating our military elite without detriment to the country. It is perhaps finally time to realize that our best young people are able to prove themselves worthy in both spheres of endeavor, but at different times.

POLICY

Defining Military Finance Policy

94UM0056A Moscow TYL VOORUZHENNYKH SIL
VOYENNO EKONOMICHESKIY ZHURNAL
in Russian No 6, Jun 1993 pp 32-33

[Article by Col. M. Smirnov: "Military Finance Policy"]

[Text] Recently the term "military finance policy" has appeared with increasing frequency in the periodical press. What exactly does it mean? Thinking logically, we

will reach the following conclusion: As a component part of finance and military-economic policy, military finance [policy] includes the totality of measures by the state, the military department, the defense sectors, enterprises, and institutions to organize and utilize finances in the interest of maintaining high combat readiness of the Army and Navy and strengthening the country's defensive might. It is closely associated with budgetary policy (including military budget) and also with finance and military-finance law.

So what is the content of military finance policy? To put it briefly, it is primarily the activity of the state and the defense complex to work out scientifically sound concepts of development of military finances, to determine the basic trends of their utilization at a particular period, and to form a program of financial support of execution of assigned missions.

As a part of military economic policy, military finance policy is intended to promote implementation of the above with the methods inherent to it. In particular, this means mobilization of financial resources for defense needs, and their distribution and utilization in the interests of reliable protection of the state, which as we know is based on economic, military-technical, and morale-political potentials, along with military potential proper. It is precisely from the state of these potentials that we can judge the effectiveness of military finance policy. The military finance mechanism, including the financial mechanism of the Armed Forces, operates as an instrument of its implementation.

These days many factors influence the development of military finance policy and the formation of the mechanism of its realization. Most tangible here are the fundamental changes: The entry of the country and its Armed Forces into market relations, the implementation of conversion of defense production, the significant reduction in the numerical strength of the Armed Forces, and its reform. The changes occurring in the country and its Armed Forces vitally affect the operating conditions of the defense complex and the quantitative and qualitative parameters of military economic activity. Naturally, the maintenance of these parameters at the required level, and the regulation of these parameters make it necessary to adapt military finance policy to the changing financial and economic conditions of operation of the country's defense complex.

But what is the ultimate goal of adaptation of military finance policy to market relations? Indisputably, it is to form a system and a mechanism for meeting the financial and economic needs of the defense complex, which would make it possible safeguard the country's security with a minimal diversion of financial resources.

Proceeding from this general goal, one can distinguish the primary tasks of adaptation of military finance policy to market conditions. These include, first of all,

the development of a scientifically sound concept (strategy) of military finance policy for the future, with allowance for the majority or all factors which influence it.

Second, the formation of a program to implement the developed and agreed military finance policy in the interests of creating optimal financial and economic conditions for support and regulation of parameters of military economic activity of the country's defense complex. Of course, to implement the developed military finance policy and control financial support of military economic activity of the defense complex, it is also necessary to create the corresponding military finance mechanism. That is third.

Fourth, a legal formulation of the status, technology (procedure) of writing and approval of the military budget (including protection of its expenditures from inflationary processes), and also the development and publication of the corresponding legislative documents on the financial and economic activity of defense enterprises, institutions and organizations. It goes without saying that the writing and approval of the military budget requires comprehensive justification of the amounts and the structure of military expenditures for a particular period, and of the sources and methods for covering them. This is fifth.

In developing and conducting military finance policy, special attention must be paid to the creation of the necessary volume of military finance resources, and to the search for ways to increase them, particularly at the expense of budgetary sources. Reality itself demands this. One should note that in distributing military finance resources, we must also allow for the very important question of ensuring the social protection of service members and their families.

I believe that the following principles can be rightly made the basis for adaptation of military finance policy and the mechanism of its realization to a market economy:

The scientific principle. After all, in order to adapt military finance policy and the mechanisms of its realization to market conditions, we must profoundly understand the law-governed regularities of formation and development of the market economy, and allow for objective and subjective factors directly influencing the parameters of activity of the defense complex of the country under present-day conditions.

The principle of interrelation of military finance policy and the mechanism of its realization with financial and military economic policy, with the renewal of the financial credit mechanism in the country, and also with the conceptual provisions of military reform in the interests of guaranteed financial support of improvement of the Armed Forces, and other structures of the defense complex and social protection of the persons employed in it.

The principle of a systems approach to development and conduct of military finance policy, and to implementation of changes in the military finance mechanism depending on the goals, tasks, stages and deadlines for their execution.

The principle of optimality in the combination of centralized leadership of military finance policy and the mechanism of its implementation, with significant expansion of independence and enhancement of the responsibility of the defense complex structures themselves in the utilization of finances.

The principle of distinguishing the main link. With expansion of the tasks of military finance policy the concentration of material, labor and financial resources in decisive sectors of the defense complex, priorities should be defined.

Note that the process of adaptation of military finance policy and the mechanism of its implementation to market relations should be implemented with a gradual shift from primarily administrative methods to primarily financial and economic methods of support and regulation of the working parameters of the defense complex. However, this process must allow for the need to maintain the defense capability of the Fatherland at the level required today, with minimal diversion of financial and economic resources, and it must be closely linked to the programs of the RF government to deepen economic reforms in the country.

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Maj-Gen Malkov on Perceived Military Danger, Threat

94UM0040B Moscow SOBESEDNIK VOINA
in Russian No 13, Jul 1993 pp 2-4

[Interview with Maj-Gen (Reserve) Viktor Ivanovich Malkov, doctor of philosophy, by SOBESEDNIK VOINA correspondent under the rubric "Military Reform: Problems and Solutions": "Is the Threat Imaginary or Real?"]

[Text] **National security, defense adequacy and defense awareness—various aspects of these concepts are more and more frequently the subject of discussion and debate during this period of reform of the Armed Forces.**

Is there a foreign or internal military threat to the nation today? What constitutes that threat, and what kind of armed forces do we need because of it? Our correspondent interviewed Maj-Gen (Reserve) V. Malkov, doctor of philosophy, on this subject.

[Sobesednik Voina] Viktor Ivanovich, speaking of the concept of national security, what trends should be pointed out, and how would you describe defense awareness today?

[Malkov] There are diverse points of view on this matter in the society today, including extreme ones from assertions that "there are threats from all directions" to denials such as "there are no threats at all."

Let us try to look at the praxis of military organizational development from the exaggerated concept of dangers facing us such as that accepted in past decades. There were definite grounds for this. A problem of survival arose for our nation immediately after World War II, created by the U.S. monopoly on nuclear weapons. Nuclear blackmail, the arms race and the cold war all necessitated a serious defense effort. Strategic military parity was achieved as a result of steps taken in response. This cost us dearly, however. The increase in defense outlays greatly exceeded the growth of the national income. It was precisely these incredible costs which ultimately threw the economy out of balance. The West exhausted us in the arms race.

The exaggeration of external threats, their distorted assessment and consequently, the distorted reaction ultimately led to distortions and errors in military organizational development and to the militarization of public awareness.

Now let us attempt to consider the matter from the standpoint of the "understated interpretation of the threat," which predominates today. It is manifested in categorical assertions to the effect that "the military danger to Russia has disappeared" and reasoning such as: Just who needs to threaten us? Who is planning to conquer us? And who is thinking about ruining us? We are not being threatened with war but are receiving assistance with the destruction of our superabundance of nuclear and other weapons and being provided humanitarian aid.

[Sobesednik Voina] What do such sentiments lead to?

[Malkov] The downplaying and particularly the denial of a military threat are contributing to a disorientation of the state and the people. It creates a temptation to disarm unilaterally and diminishes attention to problems of defense and the Armed Forces. The Army ultimately begins losing its fighting efficiency, combat readiness and controllability.

[Sobesednik Voina] Has this affected other aspects of public life?

[Malkov] In the spiritual realm, the downplaying of military threats and dangers has produced universal pacifism. Promoting the idea that service in the army is unnecessary or even detrimental has become paramount. There was a reason why tens of thousands of draftees did not report to the induction centers this spring. The attempt by the Russian Federation's Supreme Soviet infinitely to enlarge the list of people entitled to deferments from the military service could lead to a breakdown of the conscription effort entirely. Some reasoning is reminiscent of that which existed on the eve of the war in '41. We know what that caused. I recall the case of Col Verkhovskiy, commander of an artillery regiment. In his

concluding statement at a party meeting on 17 June 1941 he said: "Comrades, this could be our last party meeting in a situation of peace." He was arrested that same day. On 22 June the enemy bombed Smolensk, where a party commission had expelled him from the party.

Both the former exaggeration and today's downplaying of the military danger and threats are having an extremely negative impact upon Russia's defense capability and its future security. Accepting such extremes is to create a situation in which the Russian Army might not be able to carry out its mission. We need to assess the danger and the threats objectively and deliberately. Neither the political nor the military leadership can afford to make a mistake in this matter.

There exist many "conclusive" facts to which some people, including some holding extremely important positions of great responsibility, have grown accustomed and become comfortable with. They become stereotypes and include sentiments on the existence of a military danger. The myths and stereotypes must be destroyed, no matter how difficult that might be. In order to do that, though, we must first of all clarify the essence of the concepts used.

[Sobesednik Voina] But still, just what is the basis for claiming the existence of a military danger and a military threat?

[Malkov] Can one agree that the factors giving rise to war have now "disappeared"? No, they still exist, although the concept of the "expediency" of solving political, economic, national, territorial and other problems by military means has undergone a fundamental change.

Here is an excerpt from a document approved by the Joint Chiefs of Staff of the U.S. Armed Forces last year, entitled "The National Defense Strategy of the United States." It precisely defines the vital interests of the USA: "to promote the healthy economic growth and prosperity of the nation, including securing access to foreign markets, energy sources, mineral resources, oceanic lines of communication and space."

The matter is not limited to economics and politics, however. The technological aspect of the military danger is still with us and is perhaps even increasing. It lies not only in the nuclear and other arsenals which actually exist but also in the possibility of an unintended outbreak of war as a result of miscalculation or equipment failure. The scientists maintain that there is even an increased probability of war stemming from this.

We must not forget the fact that military bases of the USA and other NATO nations surrounding the former Soviet Union have not been dismantled. Around a half-million military personnel are billeted there, and thousands of combat aircraft and more than 42,000 tanks and other equipment are located there. To a large extent, those in charge in the American military command element have kept their former views on possible

versions of wars and armed conflicts in 1994-1995. They do not rule out war against Russia as the successor to the USSR, which retains its ability to destroy the USA with nuclear weapons. The scenario involving a NATO war against Russia and Belarus for the Baltic region is something new.

And so, it is at the very least premature to speak of the absence of any sort of military danger to Russia. Just as it is premature to dismantle those structures of the military system designed to react appropriately to an economic or technological military danger emerging from adjacent or distant foreign countries.

[Sobesednik Voina] More than once attempts have been made to pass off the causes and sources of war as a fatal inevitability of war.

[Malkov] That is not the case. The military threat results from the interaction of the objective and the subjective factor. Events of recent years should be viewed through this dialectic. All wars are an extension of the policy of certain forces. In Grenada, Panama, Kuwait and Iraq—the U.S. has defended its vital interests everywhere by military and not at all by diplomatic or any other means. The world lives according to laws in which military power has the main role and a specific policy is an expression of strength or weakness.

One does not have to look for factors destabilizing the international situation. Think of the war in Yugoslavia. Is it not a prologue to a future "world of conflict," in which policy implemented "from a position of strength" will have priority in determining the fate of the world's peoples, including the people of Russia. American intelligence experts have already predicted that if the economic situation in our country does not stop deteriorating and ethnic conflicts are not settled by peaceful means, there could occur 12 regional wars within the territory of the former Union. They have even calculated probable casualties and numbers of refugees.

So a military threat does exist. This should provide an incentive to direct attention to both the factors and the policy which can create the threat. Even though the need to reduce armaments is recognized throughout the world today and some substantive steps are being taken in this direction, the reliance on military force still continues. We should not single out any state or group of states as the likely enemy, of course. This concept should be replaced with the concept of a "potential enemy," taking this to mean not an actual army of a real country but a sort of collective image conforming to a description of the armed forces of militarily the most highly developed states. And it would not be a bad idea consult a document produced by the U.S. Defense Department, the "Defense Planning Manual" (March 1992). It states unequivocally that the United States is now the only superpower and that it must support and strengthen its status.

[Sobesednik Voina] In short, we cannot do without a powerful Armed Forces with a qualitatively new foundation....

[Malkov] Despite the positive changes, there continue to exist economic, territorial, national and other conflicts. They can affect Russia's interests. Priority absolutely must be given to political means for resolving conflicts. It is a well-known fact, however, that such means are effective only if policy is supported by at least adequate military strength. Corresponding provisions must be reflected in the concept of Russia's national security and in our practical steps to reform and further develop Russia's Armed Forces. In order to focus on solving its extremely difficult problems, Russia must have a powerful army equipped with the most modern weapons, mobile and meeting all the demands of the contemporary military-political and strategic military situation.

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Col-Gen Bologov on Problems of Manpower Acquisition

94UM0040A Moscow SOBESEDNIK VOINA
in Russian No 14, Jul 1993 pp 2-4

[Interview with Col-Gen Vitaliy Ignatyevich Bologov, chief of the Main Mobilization Organization Directorate and deputy chief of General Staff of the Russian Federation's Armed Forces, by Lt-Col V. Nikitenko, SOBESEDNIK VOINA correspondent, under the rubric "Military Reform: Problems and Solutions"; "Who Will Join the Ranks?"]

[Text] Problems in manning Russia's Armed Forces are at the center of attention of the Army and Navy community, state and military officials. Our correspondent interviewed Col-Gen V. Bologov, chief of the Main Mobilization Organization Directorate and deputy chief of General Staff of the Russian Federation's Armed Forces, on how they are being solved and what kind of difficulties are being encountered.

[Nikitenko] At the beginning of the year, Vitaliy Ignatyevich, at the most diverse levels, including Russia's Supreme Soviet, you raised the issue of the impoverished state of manning the Armed Forces. You even spoke of an impending disaster which could result. You submitted proposals for solving the problem. Does the General Staff's reasoning appear to have been heeded?

[Bologov] The situation was indeed very difficult. We were able to place into the formation only 27-29 percent of the youth registered for military service. The forces were manned by only 50-50 percent.

How could one not be alarmed by this? All the more since there were no prospects at all for 1993. This year we are discharging servicemen from three inductions, one in the spring and two in the fall. The last 2-year personnel and the first 1.5-year personnel are departing into the reserve. Can you imagine the extent to which the regiments and divisions are going to be reduced and what their combat readiness will be like? This is the

situation in which the "Law on Military Obligation and Military Service" took effect, which provides for a large number of draft deferments. I will say frankly that our Armed Forces found themselves facing a crisis. Urgent measures were needed.

[Nikitenko] And were they adopted by the Supreme Soviet?

[Bologov] To be honest, we were counting on more. This is why: As of 1 January of this year we are able to draft into the Army and Navy no more than 16 percent of the 1.8 million registered for military service, that is, around 300,000 men a year. The rest are legally eligible for draft deferments. The manning level of the Armed Forces will stand at only 51.2 percent following the spring induction and will be even lower in the fall. Those in charge in the "forces" ministries have therefore appealed to the Supreme Soviet to halt temporarily the implementation of some articles in the "Law on Military Obligation and Military Service." Unfortunately, the "Decree on Certain Measures Pertaining to Implementation of the 'Law of the Russian Federation on Military Obligation and Military Service'" proved to have little effect and is not solving the manning problems. It is disappointing that not all of our proposals were incorporated into it. For example, the General Staff proposed halting deferments for students at PTUs [vocational and technical schools] and *tekhnikums* who have reached the age of 18 and have a secondary education. This would not have fully solved all of the problems, of course, but it would have increased the number of draftees for the fall induction by a mean figure of 55,000. We did not "target" either VUZ students or those who had entered PTUs or *tekhnikums* for 8th or 9th-grade students. And what happened? The Supreme Soviet authorized the induction only of those students who had reached the age of 20. And there are no more than 1,000 of these in all of Russia. So the fall draft holds the promise of a disaster. In order to prevent this, the Minister of Defense has written a letter to the Chairman of the Supreme Soviet requesting that the latter go back and reconsider the decree.

[Nikitenko] Did such an important document really turn out to be produced merely for effect?

[Bologov] Not entirely. It does provide something, of course. Among other things, it no longer indicates a right for citizens to choose alternative service. Experience has shown that we do not yet have the conditions for that—and it is not even a priority. Foreign citizens are permitted to serve in Russia's Armed Forces: In units and subunits of the Army, the Navy and the Border Troops stationed outside the Russian Federation, in former republics of the USSR, to be sure. Citizens of those states may be drafted if appropriate bilateral, intergovernmental agreements have been concluded.

In addition, the decree provides an interpretation of certain provisions of the law. For example, the term "educational institutions for which draft deferments are granted" applies only to those with state accreditation.

Previously, numerous VUZs and colleges with semi-departmental, semi-private affiliation were authorized to grant deferments. To enter them it was necessary only to pay a hefty amount of money. No exams were required. The individual would receive certification that he was a VUZ student and therefore not subject to the draft. This especially suited young, newly emerged businessmen. This is how they evaded the service. It is now considerably more difficult to do so.

[Nikitenko] Is it that the old problems of manning the Armed Forces remain, or is there something new?

[Bologov] Of course there is. The Law "On the Militia" passed this year without coordinating it with the Ministry of Defense threw a monkey wrench into the works for us. Previously, MVD [Ministry of Internal Affairs] agencies accepted only those who had served out their service term, who knew how to handle a weapon and were experienced, but now 18-year-old men are drafted into the militia. I am not certain that this will help matters. In addition, young recruits continue to have to be assigned as replenishments to military construction detachments under various ministries and departments.

There is one other cause for concern. There has recently been a drastic increase in the number of young men exempted from the draft for reasons of health. Here is an example. At the beginning of the spring induction only 4,530 people were registered as suitable for operational service, while around 5,000 young Muscovites were considered unsuitable for military service for various reasons.

[Nikitenko] The localism of certain leaders of republics, *krays* and *oblasts* is also no doubt making itself felt, those who attempt primarily to man civil defense, military construction and internal troop units stationed inside their territory and fail to consider the fact that soldiers are also needed on Kamchatka and in the North.

[Bologov] Unfortunately, that is so. They forget that the "Law On Defense" specifies the extraterritorial principle for manning the Armed Forces. The actions of these officials—and they include the administrative heads of the republics of Bashkortan, the Komi, and Udmurt republics, the governor of Nizhniy Novgorod and the Oblast Council of Ivanovo Oblast—frequently take action counter to our plans and prevent the efficient distribution of our pool of draftees. In some regions, absolutely extreme decisions are adopted. Today you will not see youth from the Republic of Tatarstan serving outside the republic. They all serve in units within its territory.

[Nikitenko] Have not even those volunteering to serve under contract relieved the severity of the problem? Their numbers are constantly growing, after all. Encouraging reports are coming in from the ZGV [Western Group of Forces], the Leningrad Military District and the Northern Fleet. The military commissariats have entered into this work....

[Bologov] Still not as many as we would like, though. There are more contract personnel in the Western Group of Forces, where they are paid in German marks, of course, than in Siberia. I will not even mention the hot spots. There have been more volunteers to serve under contract since the government allocated additional funds for their support. But let us take a focused look at this matter. Just who is joining the ranks of the contract personnel today? Mainly reservists residing near the military units. Most frequently they have already been affected by production curtailments and economic difficulties. They ordinarily have a place to live, and their children attend school or kindergarten. It is therefore a difficult matter to send them to where there is an acute shortage of specialists. And this is necessary in the interest of security and defense. There is one other important factor. Most of the volunteers choose to serve not in combat units but in support units.

With respect to the role of the military commissariats in the selection of those desiring to serve as volunteers, it has grown perceptibly. The future professionals receive their basic information there, and learn about the legal and social guarantees provided by law, and from there they are sent into the military units to gain a more thorough knowledge of service conditions. It is therefore very important for these matters to be handled in the military commissariats by competent people able to interest the future contract servicemen in the prospects. It is also important to establish close interaction with those units from which the requests come in. This has been accomplished in the Leningrad Military District, a fact borne out by the number of those accepted to serve under contract.

[Nikitenko] What other measures is the General Staff proposing to stabilize the manning situation for the Army and Navy?

[Bologov] We have already talked about some of them. The government has also lent its support to our proposal on reducing the number of military departments at VUZs. What is the purpose of this? The fact is that their numbers exceed the need for reserve officers. By eliminating a number of departments, we will be able to draft the VUZ graduates into the army to serve in positions of enlisted men. Right now most of the graduates of military educational institutions receive their officer ranks immediately upon graduating and almost automatically become reservists. That is a luxury we cannot afford at this time.

[Nikitenko] Despite the current serious problems, Vitaliy Ignatyevich, one would like to believe that in the near future Russia's Armed Forces will no longer be experiencing manning difficulties and that it will once again be prestigious to serve in them.

[Bologov] I hope so. This is the purpose of the military reform. This is what we are working toward.

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GROUND TROOPS

Discussion of T-80 Tank Performance

94UM0047A Moscow *TEKHNIKA I MOLODEZHI*
in Russian No 6, 1993 pp 2-5

[Article by Engineer Igor Shmelev, under the rubric: "Military Knowledge": "The T-80 Tank"]

[Text] The Russian T-80U was demonstrated with great success at the international arms exhibition in the United Arab Emirates in February 1993. This main battle tank was developed at the Kirov Plant Special Design Bureau under the leadership of General Designer N.S. Popov. Its series production was set up at that same location, in Leningrad.

Just like our previously produced T-64 (1967-1987) and T-72 (1973-1991) tanks, the T-80 is armed with a smoothbore 125 mm gun. Incidentally, the Kirov designers employed assemblies that had been worked out and recommended themselves well in the operation of the T-64 and that is the turret with all of its "filling", including the automatic load control (AZ). They specially developed the drive train because they thought that the T-64's did not provide the proper off-road capability and did not have any capacity for modernization, after which a vehicle inevitably puts on weight. Kharkov designers designed it, attempting to decrease the overall weight of the tank and reduce its silhouette.

But the main thing that differentiated the T-80 from the T-64 and T-72 was the gas-turbine engine (GTD), that was employed in a tank for the first time as the main engine. We stress—main—because a similar engine in the Swedish Strv-103, that was accepted into the inventory in 1966, served as a supplement to a diesel power plant and was turned on only during movement at maximum speed. The American M1 Abrams became the second gas-turbine in the world, the development of which began in 1972 and production—eight years later.

Like a diesel, a gas-turbine engine can operate on different types of fuel. It is best adapted to a change of traction depending on road conditions, does not stall when the tank abruptly stops, starts easier at low temperatures, does not need to warm-up after starting, and almost immediately reaches full power. Fuel burns in a special chamber and the gases that are formed enter into a turbine. In the process, the rotational speed of the output shaft of the GTD-1000T that is installed in the T-80 reaches 3,150 rpm. This permits us to manufacture an engine that is comparatively small and light with high size output (horsepower per kilogram of its weight). Indeed, it lags behind a diesel in economical operation and has a lower technical engine service life (500 hours for the GTD-1000T, but already 1,000 hours for the GTD-1000TF that was used on the T-80B). The gas turbine also consumes more fuel and especially air. The latter circumstance compels us to complicate the air cleaning systems and ... driving the tank under water—the T-80's air intake pipes are wider than the T-72's.

As the T-80 has been modernized, it has been equipped with improved power plants. So, the T-80U that has been produced since 1985 obtained the GTD-1250 with an output of 1,250 horsepower (920 kW) five years later.

Main battle tanks combine the mobility and maneuverability of medium tanks with the strong weaponry and reliable protection of heavy tanks. The T-80B's high combat quantities have been attained due to a compact configuration with practically the lowest weight (an exception—the 1967 model of the French AMX-30). The driving compartment is located ahead, the fighting compartment, with the turret, in the center, and the engine-transmission compartment in the aft section. There is a hatch for the driver-mechanic in the forward section of the hull and an emergency hatch in the bottom. The commander's hatch is on the top of the turret on the right, and there is another hatch alongside for the gunner.

A PKT 7.62-mm machinegun is twinned with a D-81 125-mm gun which is stabilized in two planes. Furthermore, there is an NSVT 12.7-mm anti-aircraft machinegun and a

902B or "Tucha" smoke grenade launch system on the turret. A screen 100 meters long along the front arises after a salvo of four 2.4 kilogram rockets 250-300 meters from the tank. The first series tanks were equipped with a thermal device for camouflage at any time of day; fuel was simply injected into the exhaust gases. But this resulted in increased fuel consumption, and therefore that system was rejected.

Weaponry includes a gunsight-rangefinder, a night gunsight, a weapons stabilizer, and a loading mechanism. T-80B tanks received "Kobra" guided missiles, and the T-80U received "Refleks" guided missiles. The former, with a shaped-charge warhead, are launched through the gun barrel and are guided by radio commands. After they emerge from the barrel, their wings unfold, the sabot is discarded, and the return communications channel is turned on, when the gunner holds the gunsight aiming mark on the target. However, the firing of these missiles is conducted at low speeds or in place, which is extremely undesirable because the tank is turned into a target for a time. The "Refleks" system is another matter—it is equipped with a laser and missiles are guided by its beam.

Tactical-Technical Specifications

	T-80B	T-80U
Year of manufacture	1978	1985
Fighting weight, tonnes	43.7	46
Length with gun, mm	9,650	10,580
Hull length, mm	6,982	7,412
Width, mm	3,582	3,600
Height to the top of the turret, mm	2,219	2,219
Clearance, mm	451	451
Average ground pressure, kg/cm ²	0.865	0.92
Maximum speed, km/h	70	70
Fuel reserve in the main tanks, liters	1,840	2,700
Range based upon fuel, km	335	375

Foreign main tanks do not have similar weaponry. In the 1960's, the U.S. Army had the M60A2 main and M551 Sheridan light airborne assault tank. However, both the one and the other served for a short time because their Shillelagh Missile System could only be used in place.

Incidentally, the T-80 outstrips all foreign tanks based upon caliber. 120-mm smoothbore guns are on the American Abrams, the German Leopard 2, and the French Leclerc, and there is a rifled-bore gun of the same caliber on the English Challenger. But the matter is not in 5-mm. The T-64, T-72 and T-80 are equipped with hydro-electro-mechanical automatic load control that permitted them to get by without a fourth crew member—a loader. The mechanism itself consists of a conveyor belt that is located under the turret. Twenty nine shell trays with projectiles are horizontally fitted onto its upper and lower rings and over them, vertically, are just as many propellant charges. The basic load consists of 38

(45 on the T-80U) projectiles of various charges, with armor-piercing subcaliber (sabot) (5.67 kg caliber), shaped-charge (19 kg) and high explosive-fragmentation (23 kg) projectiles (in flight they are stabilized by unfolding "winglets"), and guided missiles.

The effective rate of fire reaches 6-8 rounds per minute. The maximum range of aimed fire using the gunsight-rangefinder for subcaliber and shaped-charge projectiles is 4,000 meters; for high explosive-fragmentation—5,000 m, and, with the night gunsight, from 850 to 1,300 m.

The T-80B tank's fire control system includes: A laser gunsight-rangefinder (the rangefinders were optical until 1978); a ballistic computer; a weapons stabilizer; a wind and tank velocity-information sensor system and roll of the latter; relative target bearing, etc. Both the commander and the gunner can control fire on the T-80U.

A metal thermal protective jacket is mounted on the gun's barrel that protects it from the sun's rays and atmospheric precipitation, which reduces the barrel's buckling from uneven heating. After firing, a special ejector draws out powder gases from the barrel, preventing them from ending up in the fighting compartment. The anti-recoil device operates only after the round has flown out of the barrel. In that case, the gun will not be knocked from the sighting line and this has a positive impact on the results of fire.

The T-80 driver-mechanic has an electro-optical binocular, heated night-vision device with an infrared spotlight that permits him to orient himself on the terrain under natural lighting to a distance of up to 150 meters. The commander has a combined (day-night) binocular, periscopic device with an infrared radiation source. At night, 300-400 meters visibility is attained using it. The gunner, besides a gunsight-rangefinder, has a night gunsight and gonioscopic course indicator that is required for movement under conditions of poor visibility and under water.

The hull's and turret's combined multi-layer armor provides protection of the tank from all types of projectiles, and a dynamic protection system (reactive armor) has been employed for protection from shaped-charge projectiles. (The armor-penetrating capability of foreign models reaches 800-1,000 meters). The system consists of flat canisters with an explosive that are attached to the hull and turret and to its top. When a shaped-charge munition hits, the explosive is set off and partially erodes the jet of its red-hot gases. The active protection system can also be built-in. Furthermore, screens—steel sheets on a rubber "apron" that are hung on the sides, turret and in front of the nose section—protect the tank from these projectiles.

The T-80 is equipped with a device for negotiating, along the bottom, water obstacles with a depth of up to five meters and unlimited width and with equipment for entrenching and for extracting itself (a log, two cables and a pin with a bolt and nut). There is also a device for attaching minesweeping gear.

The tank is equipped with systems for protection from weapons of mass destruction and with automatic fire extinguishing equipment.

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UR-77 Mine-Clearing System

941 MUR/1 *Wine* KRASSAYA ZVEZDA in Russian 27 Oct 93 p. 2

[Article by Nikolai Poroskin, KRASSAYA ZVEZDA under the "Arsenal" rubric: "Rattleshake Over the Battlefield"]

[Text] How can a minefield be crossed? I think the answer of the majority of our readers will be the following. Combat engineers with mine detectors find emplaced mines, unscrew fuses and the path is clear. But what if the mined sector must be crossed by a column of equipment in the course of battle, and in short periods of time, at that? You won't get by with a mine detector here, and so the UR-77 mine-clearing system goes into action. Its purpose is to breach antitank minefields by the explosive method in the course of troop combat operations.

The system consists of a base vehicle (light, general-purpose, tracked chassis), launching equipment, and a unit of fire of two mine-clearing charges. The latter is a capron casing 7 cm in diameter and 93 m long filled with plastic explosive within which a detonating cable runs. The mine-clearing charges are delivered to a given distance using solid-propellant rocket motors started by an electropulse from the control panel. A disconnecting device operates at the end of the charge's powered flight phase, disconnecting the rocket motors. A brake cord creates deceleration of the charge during the fall to the ground.

After the charge hits the ground the unit backs up, putting the charge onto the minefield and straightening it. An electropulse is sent from the combat control panel through wires in the brake cord to the charge fuse and there is an explosion. The detonation transmission center provides for simultaneous explosion of both detonating cable strands. Antitank mines are actuated from the effect of the shock wave, forming a safe passage for equipment and personnel. After the explosion, the brake cord is disconnected from the system by being burned through by a special uncoupling cartridge, and the system itself is transferred to a traveling position.

The mine-clearing system operates as part of a combat engineer squad. A passage is made during the preparation of an assault or in the course of battle. The UR-77 is capable of breaching enemy minefields on the opposite bank and of launching the charge from the water.

**Specifications and Performance Characteristics of UR-77
Mine-clearing System**

Weight of unit of fire, kg	2,400
Speed, km/hr:	
Maximum	61.5
Average on dry dirt road	26-32
Afloat	4.5
Fuel range on average-quality dry dirt road, km	500
Maximum permissible terrain slopes in delivering mine-clearing charges, degrees	
Longitudinal	Up to 10
Transverse	Up to 5
Temperature interval for system use, degrees	From -40 to +40 C
Range of charge delivery, m	500
Size of passage made in minefield, m	
Width	At least 6
Length	80-90
Time for making passage, min	3-5
Time for loading system with unit of fire, min	
By mechanized method	Not over 30
Manually	90
Crew	2

AIR, AIR DEFENSE FORCES

Sad State of Bogdanovka PVO Radar Site in Georgia

94UM00414 Moscow KRASNAYA ZVEZDA in Russian 14 Oct 93 p 2

[Article by KRASNAYA ZVEZDA correspondent Sergey Dyshev under the "A Fact in Our Life" rubric: "Like Remnants of a Past Civilization"]

[Text] The photographs accompanying this article were taken not far from the settlement of Bogdanovka, which is located in southern Georgia, close to the Turkish border. Border troops explained to me that until quite recently a PVO [Air Defense] radiotechnical troops subunit was stationed here. An enormous radio-transparent dome (purpose: to protect the antenna from wind) located on a hill, visible from afar, is reminiscent of some kind of circus or of a space ship which has landed with visitors from outer space. The radar searched the skies for flying craft, operating with a radius of thousands of kilometers. What remains of the antenna is now rusting under the dome; the dome proper is gradually falling apart. Any equipment which was not withdrawn has been stolen, while the personnel housing has been taken apart for the bricks. "Visitors" from the surrounding area came with one thought in mind: Anything left behind is there for the taking. So the dome

stands there, buffeted by the winds, as if it were a sad reminder of a lost civilization.

There was a time when, in accordance with legislation produced by intergovernmental agreements, the radio-technical subunit's equipment was transferred to the Georgian side. I have no intention of evaluating the combat readiness of this materiel or the possibilities of its employment. That is the prerogative of the sovereign state, which has its own views on defense construction problems and its concept of security.

Still, looking at this picture of disintegration, one cannot help but feel bitter. After all, this represents work accomplished by a people who until recently were united. And another thing. The fact is that the time will come when it will become necessary to undertake restoration and renewal, a time when there will be no escaping the age-old problems of protecting the aerial borders. But the price to be paid will be higher. [photos not reproduced]

Daily Concerns at Air Force Central Command Post

94UM00504 Moscow KRASNAYA ZVEZDA in Russian 23 Oct 93 p 2

[Article by KRASNAYA ZVEZDA correspondent Aleksandr Manushkin: "Things Are Never Boring for the Duty General"]

[Text]

The Central Command Post of the Air Forces Handles More Than a Thousand Flights a Day

The position of duty general exists at the Central Command Post (TsKP) of the Air Forces. That sounds somehow strange, but it is a fact. Our generals do not exist for nothing, and if there is such a position it means that the person bears a great deal of responsibility which could only be borne by an individual grown wise with experience. I recall how, in the not so distant past, I too had to serve for a day as guard chief, regimental duty officer and unit operations duty officer, and how, at the end of a shift, I was so tired I could barely make it home. And I was only responsible for a regiment. Here we have responsibility for the entire Air Forces!

The duty shift at the Central Command Post of the VVS [Air Forces] has to keep in its field of view hundreds of Russian aircraft over the nation's territory and over adjacent and distant foreign parts, and to maintain "interaction" with the civil aviation and aircraft of the PVO [Air Defense], RVSN [Strategic Missile Forces] and the Navy. Here is the report for one recent day. Maj-Gen Avn Aleksandr Slukhay had just come off duty, and, with the permission of the Central Command Post Chief, he presented the report to me.

In one 24-hour period, Russia's tactical aviation and VUZs of the Air Forces made 845 flights with a total flight time of 459 hours. In accordance with the combat

training plan, aircraft of the long-range aviation (DA) took off 183 times for a total of 115 hours in the air. The Military Transport Aviation (VTA) carried out 117 flights at training centers, totalling 58 hours in the air. Added to this were 10 scheduled trips by VTA aircraft. For example, one An-124 Ruslan hauled four Mi-8 helicopters from Spain. (The rotary-wing aircraft were sent there to extinguish forest fires under an intergovernmental agreement.) One Il-76 delivered a government communications system to Tokyo (for the Russian president's visit to Japan). Two Il-76 aircraft of the VTA transported fruits and vegetables to Tiksi, Anadyr and Yelizovo. Several other aircraft arrived from Georgia and Germany carrying personnel and equipment.

Gen Slukhay and I calculated just how many times VVS aircraft had taken off during that 24-hour period. It came to more than 1,000. This fact speaks for itself. The Air Forces are engaging in scheduled training and, to the extent that this is possible, helping to perform missions for the national economy. There is no basis for the idle conjectures of certain mass media that the Air Forces have neglected the combat training, that they are performing missions not their own. A total of 1,145 training flights in a 24-hour period—is that not combat training? And what about the flights by military aircraft to transport personnel and military equipment from foreign countries and produce to the Far North and the Far East? Are these not aviation missions?

The scheduled combat training proceeded in the Air Forces even during those disturbing days in October. The usual flights were carried out in 53 air units on Monday, 4 October. Postal aircraft carried their customary cargo to Tiraspol, Kaliningrad and Shpelenberg (Germany). VTA aircraft were sent by requisition of the Central Food Directorate of the Russian Federation's Ministry of Defense to regions of the Far North with fruits and vegetables. Ruslan, Antey and Il-76 aircraft performed their usual flights to transport troops from adjacent and distant foreign parts. In short, nothing disrupted the general pace of the air units' vital functioning.

Naturally, in the current situation, all of this vital activity has to be carried out with the strictest of economy. There is not enough fuel, spare parts and other expendable materiel. The number of flights and the length of the training routes have therefore had to be contracted to a reasonable minimum.

"Some days the flight time for all the Air Forces adds up to the number of hours the regiment I commanded would previously have flown in a 24-hour period," Gen Slukhay said.

But then, these are the realities of the present day. The nation's economic troubles are having a direct impact on the military's problems. Even in these difficult circumstances, however, the airmen are doing everything possible to see that the combat readiness level does not drop in the units and that the pace of the combat training is

not disrupted for a single day. One can see this for oneself by visiting the Central Command Post of the Air Forces.

Development of Ground Attack Aircraft

94UM0052A Moscow KRYLYA RODINY in Russian
No 7, Jul 93 pp C2-1

[Part one of article by Mikhail Levin: "For Rough Work"]

[Text] The article was prepared based on a speech by Su-25 Chief Designer V. P. Babak at a session of the aviation lovers' club in the N. Ye. Zhukovskiy Scientific Memorial Museum on 3 October 1992. Additional materials were included by ONTI TsAGI [Central Aero-Hydrodynamics Institute S&T Information Department] associates. We express thanks to N. N. Venediktov, a participant in the aircraft's development from the initial stage of its creation, for preparing the material

Not very long ago we had no specialized attack aviation. The multipurpose Su-7 and MiG-21 or their modifications were used for battlefield support of ground troops. They had a large number of shortcomings: There was no armoring of the crew cockpit and of important assemblies; difficulties arose in operating from unprepared dirt airstrips; high operating speeds led to loss of visual contact with the target during a repeat run on it; a pilot was left with little time for locating and identifying these targets, and sighting in the bombing and strafing modes; and fire was conducted at long range for a safe breakoff. At that time, in the 1960's, only the USSR and United States were capable of overcoming these problems and independently developing ground attack aviation

In the USSR, the Mi-24 transport-attack helicopter became the first new series-produced battlefield flying craft since World War II. The decision to create it was made by the USSR Ministry of Defense Military-Technical Council in 1967. The Mi-24 was created on the basis of the Mi-8 civilian helicopter. Its development went on in parallel with preparation for series production, which saved time. The prototype of the new helicopter already took off for the first time in 1969, and series-produced helicopters began coming to the units in 1971. At the same time, an improved ground attack version of the Su-7 fighter designated the Su-17 and strike versions of the MiG-23 fighter designated MiG-23B and MiG-27 were being developed. They also were created rather quickly. The first experimental Su-17 (it also was the preseries model) began flight tests in 1968 and already entered series production in the following year. The MiG-23B design was prepared in 1969 and the prototype made its first flight in 1970. The MiG-27 was

created on the basis of the MiG-23B, and an experimental MiG-27 was not built by virtue of the closeness of their design. The series began right away in 1973.

The above aircraft permitted taking a step forward with respect to battlefield effectiveness, but they represented only an intermediate stage in developing specifically ground attack aviation. The Mi-24 was subjected to the most profound modification compared with the initial helicopter, but its use for supporting ground troops under conditions of heavy front air defense opposition could become ineffective in a number of instances due to its great vulnerability to machinegun and cannon fire, slow speed, short flight range, and comparatively weak onboard combat system.

Then, for the first time in the USSR since World War II, a team of designers of the P. O. Sukhoy OKB [Special Design Bureau] (O. S. Samoylovich, D. N. Gorbachev, V. M. Lebedev and Yu. V. Ivashechkin) set for itself the task of creating a specialized attack aircraft "from scratch" in the late 1960's. This idea was rather unexpected, since the position of supporters of "flying fastest, highest, and farthest" still was rather strong. The Su-25 was a low-flying, subsonic aircraft intended for "rough battlefield work with the capability of engaging all targets that do and do not move." The idea took a long time to make a way for itself. Sukhoy himself and Ioffe, his assistant for combat effectiveness, "punched" the aircraft through. Designing initially was done on an initiative basis, but then Sukhoy, who in this case went up against Minister of the Aviation Industry P. Dementyev, managed to gain the support of then Minister of Defense A. A. Grechko. ("Grechko fell in love with the aircraft").

The Special Design Bureau developed the tactical and technical specifications together with the Air Academy. Tests began in Central Aero-Hydrodynamics Institute wind tunnels in 1968 to determine the optimum aerodynamic configuration of the attack aircraft. Various versions of the aircraft's configuration, wing planform and leading edge sweep, and other geometric parameters were studied.

Three basic principles were the basis of the attack aircraft concept: High combat survivability, high maneuverability, and the capability of operating from minimally prepared Class III dirt airstrips.

The first question was resolved by using an all-welded cockpit of titanium armor, which precludes damage by heavy-caliber bullets and missile and shell fragments from main directions of fire. The armored compartment withstands at least 50 hits from weapons without cracks or spalling of armor and welded joints. Thickness of the armored compartment sides is 24 mm, rear wall 10 mm, front wall 24 mm and floor 10 mm. Thickness of the frontal armored block is 57 mm. It withstands the hit of 12.7-mm bullets.

General aircraft systems were made redundant. Mechanical control runs were partially backed up. Control rods were distributed along the sides and given increased

survivability: Their diameter was increased to 40 mm and being hit by 12.7-mm bullets would not lead to loss of control. Hydraulic and power supply systems also were backed up. Use of a pneumatic system was rejected. Fuel tank walls were covered with external sheets of a quick-swelling protective cover capable of sealing holes and essentially eliminating fuel leaks. Compartments adjacent to fuel tanks were filled with porous elastic materials.

Initially one central fuel supply tank was installed, which increased the risk of a bullet hitting the tank, but beginning in 1985 there already were two of them which operate together in a normal mode. With one disabled, the other is intact. Two such tanks were used for the first time in the Su-25UB version. Beginning with it, the tanks were installed in place of previously used tank structures. Engines were separated along the fuselage sides. In creating the Su-25, the requirement was put forth to operate it from unprepared dirt airstrips with a takeoff and landing run not exceeding 600 m. The preliminary specifications required operation with minimum soil bearing power of 4-5 kg(f)/cm², which corresponded to the condition of the surface during spring thaws. Designers coped with the task, but due to the servicing equipment's lack of conformity to the attack aircraft, a paradoxical situation formed: The Su could take off, but a fuel tanker truck, for example, was incapable of approaching it. As a result, the client lowered the level of requirements to a soil bearing power of 6-7 kg(f)/cm².

One requirement was to provide for the aircraft's autonomous operation from a staging airfield located a short distance from the front line. The task was assigned to ensure that the attack aircraft itself could carry support facilities. Four AMK-8 suspended pods were developed for this. The first contains monitoring and testing equipment; the second, ground support facilities; the third, the electric power generating unit for starting engines (it services two aircraft); and the fourth, refuelling equipment.

Preliminary specifications also envisaged high maneuver and speed characteristics: The maximum operational g-load was to be 6.5 and maximum flight speed 950-1,000 km/hr. A broad combat payload nomenclature was stipulated.

Pilot V. S. Ilyushin took the first prototype (T8-1) up for the first time on 22 February 1975.

Initially two R9-300 nonafterburning engines (nonafterburning modification of the RD-9B used back in the MiG-19), each with a thrust of 26.5 kN (2,700 kg(f)), were installed in the first two experimental aircraft, T8-1 and T8-2. Subsequently, R95Sh engines (nonafterburning modification of the R13F-300) were installed in them with a change in aircraft notation to T8-1D and T8-2D. The Tbilisi Aircraft Plant was selected for series construction of the attack aircraft. By 1978-1979 it had

made a preseries lot of aircraft with R95Sh engines, each with a thrust of 40.2 kN (4,100 kg(f)).

A total of 40 research and test projects were carried out in creating the Su-25. Around 600 models and mockups, over 20 full-scale test beds and airframe assemblies, and three aircraft with complete equipment and operating systems were tested. Over 2,000 rounds were fired against the aircraft from heavy caliber small arms and cannon with a caliber of up to 40 mm, and the Su was hit by high-speed missile fragments.

The aircraft was made in a normal aerodynamic configuration with a high wing and two engines in nacelles beneath the wing roots. The wing is straight and tapered, with leading-edge flaps along the entire span and double-section, double-slotted trailing-edge flaps. The vertical tail has a rudder and damper and there is an adjustable three-position tailplane with elevators. Engine air inlets have an oval cross-section.

To be continued

IL-102 Ground Attack Aircraft

94UM0052B Moscow KRYLYA RODINY in Russian
No 7, Jul 93 pp 2-4

[Conclusion¹ of article by Vyacheslav Kondratyev: "IL-102: Who Is Against It?"]

[Text] The IL-102 continued the "40's" line of development, but already at a qualitatively new level. Thus, the layout of IL-40 air inlets did not permit accommodating the radar antenna and modern opto-electronic sighting equipment in the forward fuselage, and to "clean the nose" the "102's" air inlet ducts were shortened up to the pilot cockpit and the ventral gun mount was shifted to the rear to keep gases from being thrown into the engines.

The attack aircraft's power plant consists of two RD-33's similar to the MiG-29 fighter's RD-33, but without afterburners. In contrast to the MiG, the attack aircraft's engines are not situated right next to each other, but are separated by the fuselage, and so each is fitted with a separate set of attendant assemblies (turbostarter, hydraulic pump, gearbox, ac generator).

The appreciable increase in the aircraft's dimensions, the sixfold increase in combat payload and at the same time the need to observe weight efficiency required changes to the scheme of armor protection.

On the "102" the Ilyushin people for the first time rejected a unified armored fuselage containing all the aircraft's vital organs. Crew cockpits and, in part, the engines and fuel supply system have protection. Fuel tanks are not armored but are covered in front and back by the armored cockpits and below and on the sides by the engines and gun mount. In addition, a system was used for filling tanks with foamed polyurethane when

penetrated. The latter is more effective than inert gas in protecting the fuel from ignition.

The principle of accommodating armament remained the same, i.e., ventral and rear gun mounts, but their design and the weapons themselves, of course, became different. The twin 9A-4071K 30-mm gun with a unit of fire of 250 rounds per barrel is mounted on a ventral swinging carriage with fixation in two positions. The carriage is lowered on cables using a built-in electric winch for convenience of loading and servicing. The mount is easily disassembled under airfield conditions. The fuselage compartment occupied by the unit of fire can be used as an additional bomb bay. The aircraft can be turned from an attack aircraft into a front bomber in a few minutes.

The rear defensive gun turret received an original ammunition feed system. Ammunition boxes for the GSh-23 23-mm twin-barrel gun were removed from the moving unit and accommodated in the front part of the fuselage tail section, permitting a significant increase in ammunition stores. Concentrating the load near the center of gravity had a positive effect on aircraft maneuverability, and ammunition expenditure during firing ceased to affect the position of the center of gravity. A reliable electric belt-tightening mechanism was developed for uninterrupted feed of rounds from ammunition boxes moved more than 3 meters away. The belt is fed into the moving part of the mount through a hole in the lower vertical hinge axis.

The attack aircraft inherited a thick, double-spar wing from its predecessors, enabling internal weapon suspension. Each outboard wing section contains three bomb bays holding 250-kg bombs. The aggregate combat payload in internal bays (including fuselage) reaches 2,300 kg. In addition, three attachment points are mounted in each outboard wing section for BDZ-UMK2 general-purpose stores racks. Two BDZ-USK stores racks can be installed beneath the fuselage. There are 16 attachment points altogether with a maximum combat payload of 7,200 kg. Using only internal bays for a bomb load considerably improves the aircraft's flight performance and reduces its signature in the radar waveband.

Avtomat-F decoy flare and chaff dispensers as well as Bereza-L ELINT system antennas are installed in downward bent wingtips.

The airframe design was developed figuring on extreme simplicity, technological effectiveness and inexpensiveness of series production, but not to the detriment of flight performance. Suffice it to say that 80 percent of the skin is formed by sheets with single curvature. This explains the attack aircraft's somewhat crude outlines, "old-fashioned" round engine air inlets and "chiselled" shapes of the fuselage.

A unique crew survival system for emergency situations was created especially for the "102." The Class "O-O" K-36L ejection seats are fitted with a one-way-action device for synchronous triggering. Explosive charges of

both seats are triggered when the pilot presses the "red button." Both crew members have equal chances for survival even if the gunner is seriously wounded or internal communications has been interrupted and it is impossible to transmit the eject order. At the same time, the gunner himself is capable of abandoning the aircraft, but cannot eject the pilot in so doing.

In contrast to the Su-25, the aircraft is fitted with two-wheeled main landing gear members with tires of relatively large diameter. Despite greater takeoff weight, it has a lesser unit load on the airfield surface. The Il-102 can operate from dirt runways.

Servicing, maintenance and preparation of the aircraft for flight do not require cumbersome airfield equipment, particularly hoisting machinery. The entire combat payload is taken aboard with the help of built-in electric hoists.

Maintenance joints permit transporting the aircraft on two standard railroad flatcars or in the cargo compartment of the Il-76-go.

Construction of the prototype advanced slowly. The design bureau was loaded down with work on other subject areas regarded as priority. In addition, without support "from above," materials and set-making articles were obtained with great difficulty. At times it became laughable. For example, the ejection seats literally were borrowed from one aircraft scientific research institute. Nevertheless, construction of the attack aircraft finally managed to be completed by the beginning of 1982. The aircraft was inspected by CMC Air Force, Chief Marshal of Aviation P. S. Kutakhov on 20 January. He gave the aircraft a high evaluation and promised that when the question of its becoming operational came up, he would vote in favor. Minister of the Aviation Industry I. S. Silayev also was a supporter of the Il. The USSR Minister of Defense had the last word.

The aircraft awaited its fate for several months. Things came to a head in May. D. F. Ustinov pronounced his verdict: "Do not conduct tests, destroy the prototype, forbid Novozhilov to engage in independent activity."

There is as yet no explanation as to the reason for the "unique" resolution and why it appeared. They say the Su-25 already was operational and had been adjusted in series production, but this is no reason to stop alternative developments. On the other hand, it is known that Ustinov was among those who in the 1950's actively imposed the

"missile theory" on N. S. Khrushchev about the lack of prospects of combat aviation, and it was he who recommended curtailing the Il-40 construction program.

The Ilyushin personnel made up their minds to fight for their aircraft. General Designer G. V. Novozhilov turned to Kutakhov for support. The latter twice raised the question of continuing work on the Il-102 (the last time the conversation with the minister took place in elevated tones). Ustinov was adamant. Not even an approval for conducting tests was received from him.

The aircraft's creators decided to sidestep the "wall." They replaced the "dangerous" Il-102 designation with a neutral abbreviation, OES-1 (test and experimental aircraft-one). After this, Silayev gave permission to conduct a full cycle of tests on his own responsibility. The aircraft was transported to a military airfield in Belorussia as far as possible from the eyes of higher-ups. There Honored Test Pilot S. G. Bliznyuk, the Design Bureau chief pilot, took the "flying tank" of the 1980's up for the first time on 25 September 1982.

Tests were uncommonly successful. Over 250 flights were made during 1982-1984, and in all this time not one breakdown or failure of onboard systems occurred and not one emergency situation arose. The aircraft demonstrated high flight performance², surpassing the Su-25. It had good stability on the target run and, at the same time, a maneuverability unique for its class. The minimum turn radius did not exceed 400 m!

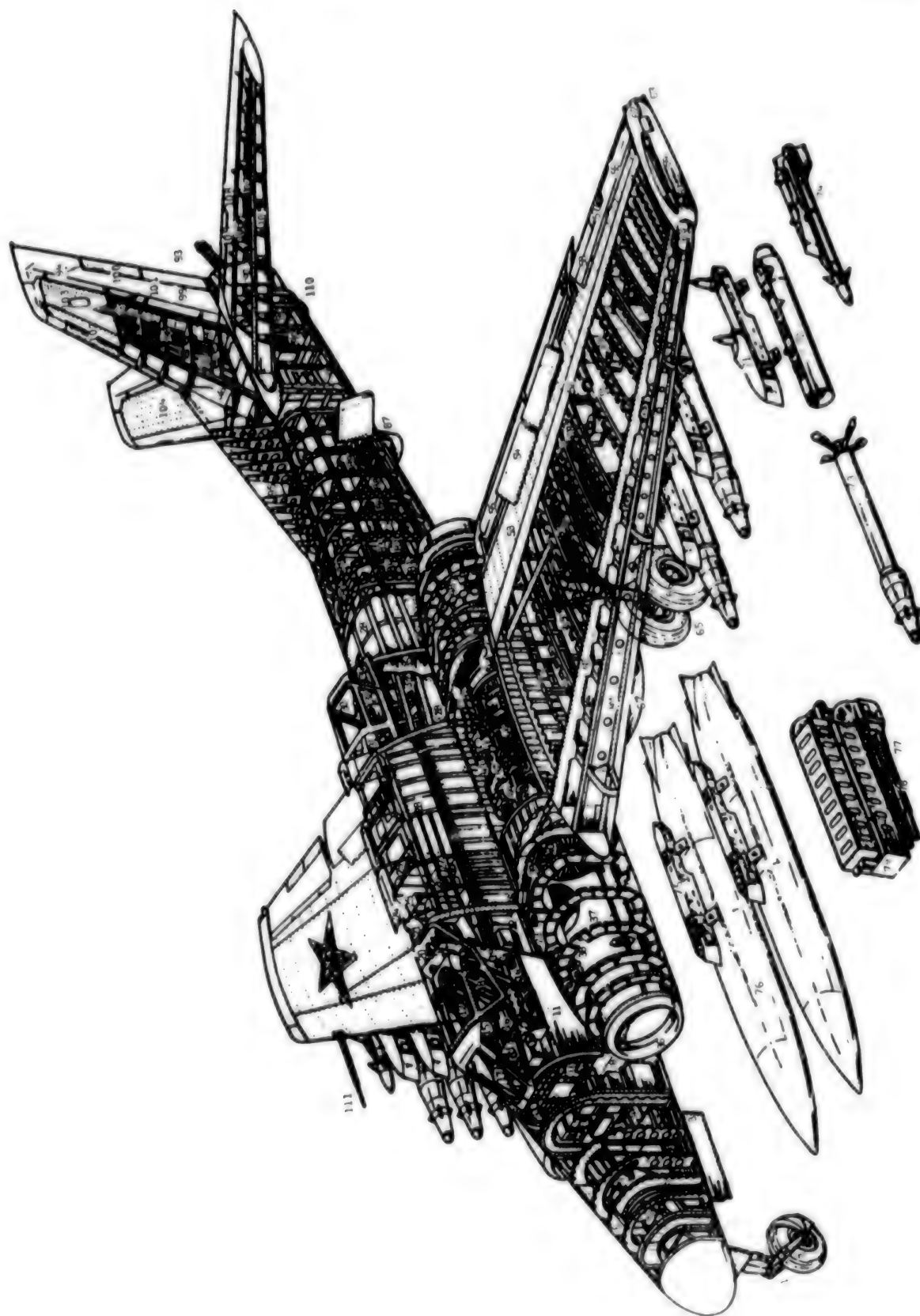
Flights continued until engine life had been used up; then the aircraft returned to Moscow and was "moored" in a hangar of the Ilyushin Special Design Bureau. The ejection seats had to be returned to the owner.

The question of the "102" returned briefly in 1986, but the powerful attack aircraft was again rejected. Successful tests of the two-seater Su-25TK and the conversion which loomed ahead closed off its prospects once and for all.

Footnotes

1. Beginning of article in KRYLYA RODINY, No 6, 1993.

2. Specifications and performance characteristics: Wing-span 16.9 m; length 17.75 m; maximum takeoff weight 22,000 kg; maximum combat payload 7,200 kg; radius of action 500 km; maximum speed 950 km/hr; ferry range 3,000 km; length of takeoff/landing run 300/300 m.



Il-102 Layout Diagram

Key: 1. Nose landing gear; 2. Unbraked 485 wheel; 3. Nose compartment door; 4. Nose compartment; 5. Landing gear crossarm brace; 6. Landing gear lock beam; 7. Nose compartment door control crosspiece; 8. Forward equipment bay; 9. Windshield wiper drive; 10-11. Pilot cockpit armor protection; 12. Pilot cockpit; 13. Pilot instrument panel; 14. Left console; 15. Right console; 16. Control stick; 17. Sight; 18. K-36L ejection seat; 19. Armored back; 20. Emergency canopy jettison mechanism; 21. Hydraulic reservoir; 22-23. Equipment bays; 24. Upper equipment bay hatch cover; 25. Altitude-and-heading reference; 26. BUS-3 control and communications unit; 27. ARK-22 receiver; 28. Fuel tanks with 5,370 liter capacity; 29. Filler neck; 30. Operator cockpit; 31. K-36L ejection seat; 32. Instrument panel; 33. Left console; 34. Rear mount sighting station; 35. Operator armor protection; 36. Heated air inlet lip; 37. Air inlet duct; 38. Engine nacelle primary structure frames; 39. Front primary ring; 40. Engine compressor stator; 41. RD-33I engine; 42. Gearbox; 43. Hydraulic pump; 44. Turbostarter; 45. Ac generator; 46. Jet pipe; 47. Rear primary ring; 48-53. Elements of wing primary structure; 54. Wing brake flaps; 55. Trailing-edge flap; 56. Aileron; 57. Aileron trim tab; 58. Aileron servo tab; 59. Avtomat-F decoy flare dispenser; 60. Bereza-L equipment antenna; 61. BANO [side navigation lights]; 62. Bereza-L equipment antenna; 63. Current collector; 64. Main landing gear bay; 65. Main landing gear; 66. KT 81/3 brake wheels; 67. Landing gear fairing; 68. Bomb bay; 69. FB-250 aerial bomb; 70. BDZ-UMK2 stores rack attachment points; 71. BDZ-UMK2 stores rack; 72. PU 12-40U launcher; 73-74. Missiles; 75. BDZ-USK stores rack; 76. Suspended 800 liter fuel tank; 77. Ventral gun mount; 78. 9A-4071K guns; 79. Ammunition boxes; 80. Rear equipment bay; 81. Oxygen cylinder; 82. Rear mount drive control unit; 83. [Omitted] 84. Engine starting unit; 85. HF antenna matching device; 86. Rear mount ammunition box; 87. Fuselage brake flaps; 88-89. Brake flap control mechanism; 90. Electric cartridge belt tightener; 91. Automatic gun reloader; 92-93. GSh-23 gun; 94. Vertical tail; 95-98. Elements of vertical tail primary structure; 99. Rudder; 100. Trim tab; 101. Rudder servo tab; 102-103. Antenna fairings; 104. Tailplane; 105-107. Tailplane primary structure; 108. Elevator; 109. Elevator trim tab; 110. Tail bumper; 111. [Omitted]

NAVAL FORCES

Kasatonov Interviewed on Doctrine, Reforms

94UM0043A Moscow MORSKOY SBORNIK
in Russian No 7, Jul 1993 pp 3-8

[Interview with Adm Igor Vladimirovich Kasatonov, 1st deputy commander in chief of the RF Navy, by Capt 2d Rank Ye. Vodopyanov; date and place of interview not given: "Russia Cannot Live Without the Fleet"]

[Text] Whenever our country has suffered difficulties, in view of economic, political and other causes, the Fleet has been one of the first to feel them. And each time Russia underwent rebirth and reinforced its statehood, its eyes turned to the Fleet, because history teaches us that a country that does not possess naval power is deprived of the possibility of influencing world processes. Today Russia is in a stage of reforms that are affecting one of the components of its military might—the Navy. What is the nature of the naval component of the new, defensive military doctrine of the Russian state? This is the question with which our correspondent began his interview with Admiral Igor Vladimirovich Kasatonov, first deputy commander in chief of the RF Navy.

[Kasatonov] The fundamental principles of our naval strategy in the modern situation may be worded as follows. First, creation of a fleet that must provide for the country's security from the sea in any situation in coordination with other arms and services under the conditions of significant reduction of the Russian Armed Forces. Second, maintaining the Fleet at high combat readiness in order that two strategic concepts of its application could be realized: In peacetime—

"deterrence and naval cooperation," and in the event of the threat of an attack—"timely defense and curtailment of aggression."

[Vodopyanov] What is the essence of these two concepts?

[Kasatonov] The first of them presupposes the need for the existence of a fleet which would visibly and persuasively demonstrate to any potential aggressor that an attack on Russia and its allies would lead to consequences unacceptable to him. The essence of the second concept is timely establishment of control over the most important key positions by naval forces in a period of growing danger of war, and creation of force groupings for all missions inherent to our Fleet, including participation of naval strategic nuclear forces in retaliatory actions by Russian strategic nuclear forces. Attainment of these goals doubtlessly requires establishment of a modern fleet that is balanced in component services and means of support, qualitatively better, lower in numerical strength, and correspondingly less burdensome to our state in modern times.

[Vodopyanov] There can be no doubt that laws we have adopted of a defensive nature, among which "On Security," "On Defense," "On the Military Obligation and Military Service" and "On the Status of Servicemen" are especially fundamental, introduce a solid legal foundation beneath development and reform of the Army and Navy. It would seem that they are also oriented on solving the problem you mentioned: Reducing the personnel of the Fleet while simultaneously upgrading its quality. In your opinion, what other objectives will adoption of the whole package of these laws help us to reach?

[Kasatonov] Consider that same old problem of recruitment. It's no secret that it has recently grown worse. In fall of last year the military commissariats were able to draft only around 30 percent of the young persons whose time had come to fulfill their military obligation. In this connection, the load upon officers and warrant officers has increased significantly, and maintenance of ship weapons and equipment has worsened. Today this situation continues to be alarming. Many ships are 60-70 percent manned. This state of affairs is associated with instability of the situation in the country, with imperfections in legal acts, and with a reluctance of induction-age youths to serve in the Armed Forces. This is why we hope that the law "On the Military Obligation and Military Service," which introduced many new things into the recruitment system—in particular, it permitted service on a contract basis—will have a favorable effect on strengthening the country's defense capabilities, including the Fleet's combat readiness. Creation of ship crews out of volunteer professionals will make it possible to practically minimize turnover of personnel (today, up to 33 percent of seamen and petty officers rotate off ships twice a year). This means that the crews will become stabler, and this will provide a possibility for consistently improving the special skills of the seamen.

We also hope that manning the ships and unit with volunteer professionals will have a favorable effect on military discipline, since the soil itself for negative phenomena such as "*godkovshchina*" [naval version of hazing of conscripts] will disappear.

In short, the documents we are discussing will doubtlessly promote establishment of a healthier ideological and moral atmosphere in the military collectives, and this will be quick to affect their combat capability as well.

[Vodopyanov] It is well known, however, that the combat readiness of the Fleet, which is one of the military systems that is most highly saturated with equipment and weapons, also depends to considerable degree on the state's economy. And pauses and delays in the Navy's development cause it to quickly fall behind modern requirements to a point from which it is difficult to catch up. There are many examples of the negative influence that the present crisis in our country is having on the real combat readiness of Fleet forces. Nonetheless, what in your opinion is the most alarming; what trends can you discern here?

[Kasatonov] Yes, the sharp worsening of Russia's economic position has also reflected seriously upon the Navy. The naval ship building program was significantly reduced. Financial resources are being invested mainly into upgrading ships at a high level of readiness. In the last 5 years the Navy's effective combat strength decreased by almost half in relation to submarines, including atomic; by one-third in relation to large surface ships; and by almost twice in relation to ships intended for actions in the near naval zone. Retirement of obsolete ships from the fleets, reduction of naval strategic

nuclear forces and elimination of a significant part of our airplane fleet in accordance with international obligations adopted by Russia as the successor to the USSR will continue according to plan. Although even with reduction of the numerical strength of the Navy, we are continuing to experience a number of difficulties associated with the economic and political situation in the country. In particular, our Fleet seriously felt the fuel shortage just last year. There are problems, as I mentioned above, in manning the units and ships with personnel. The USSR's disintegration into independent states is also having an effect on the Fleet's situation.

[Vodopyanov] Are you referring to the bases the Navy recently lost?

[Kasatonov] Not only to them, but to the entire basing system as well, which underwent creation and development on the Black, Baltic and Caspian Seas from the moment of the birth of the Russian Fleet. Today it consists of a complex of interrelated naval bases, airfields and other stations set up in advance on the coast and on islands, and intended for comprehensive support to the combat and daily activities of Fleet formations and units. This system is capable of fully satisfying the needs of Fleet forces based at these stations, it is fully equipped in navigation and hydrographic respects, and it possesses the necessary reserves of materiel. However, there is much that we have to reexamine and change within it.

[Vodopyanov] Could you discuss the combat readiness of the Navy in this aspect in greater detail?

[Kasatonov] In the Black Sea, over 90 percent of all basing facilities, and of the effective combat strength of the Fleet as well, remained in Ukraine. In the Caspian, the most highly developed basing system turned out to be within the territory of Azerbaijan, in the vicinity of Baku.

In order that readers could understand the full severity of the situation, let me dwell in greater detail on the situation of the Baltic Fleet as an example. It used to have a developed, balanced basing system that included the Baltiysk, Liepaja, Ust-Dvinsk, Paldiski and Tallinn naval bases, the last four of which are within the territory of presently sovereign Baltic countries. Up to 50 percent of surface forces and up to 100 percent of submarines were concentrated there, and up to 25 percent of the Fleet's combat aviation was concentrated at airfields. In addition, 80 percent of stations used for dispersed basing of the forces of the Baltic Fleet, 64 percent of its ship repair capacities, and up to 80 percent of coastal observation and communication posts and storage capacities, which contained 60 percent of the principal reserves of weapons and materiel, remain in Estonia, Latvia and Lithuania. In the postwar period, we spent around 38 billion rubles (in 1990 prices) to create this entire infrastructure of the Baltic Fleet.

Today, in connection with withdrawal of Fleet forces and troops from the Baltic countries, normal operation

of the Fleet requires development of an infrastructure on Russian territory, which will take 5-6 years and will require around R22 billion (in prices of the first quarter of 1992).

[Vodopyanov] And naturally we can't forget about the people who are forced to leave the places in which they made their homes....

[Kasatonov] ...And, if I may continue your train of thought, the accommodation of whom also requires financing, funds and time. Consider that there are 19,500 servicemen in the Fleet formations and units being withdrawn from the Baltics, to include 7,500 officers and warrant officers and around 8,000 blue and white collar workers. This is more than 15,000 families!

[Vodopyanov] How is the Fleet dealing with this situation?

[Kasatonov] We have developed a realistic plan for withdrawing Fleet forces and troops to Russian territory. Taking the human factor into account, we are making an effort to time the deadline of this withdrawal with completion of a comprehensive package of measures to accommodate troops and forces at new stations. But the Navy does not have enough possibilities to solve this problem alone. We need a specific-purpose federal program.

[Vodopyanov] And then there's also Ukraine's self-determination, as a result of which the Russian Navy has found itself in a difficult position in regard to ship repair.

[Kasatonov] The problems of ship repair were brought about not only by secession of the Baltic countries or, as an example, Ukraine, where the necessary capacities for repairing aircraft-carrying cruisers were located. Because of inadequate budget appropriations, the volume of ship repair in Russia itself was significantly reduced. This led to failure of planned delivery of a large number of ships to the ship repair plants. The number of workers at ship repair enterprises has decreased because the best-trained specialists are leaving for commercial organizations.

This difficult position is forcing the naval command to make decisions that are painful to the Navy— withdrawing ships and vessels into the reserves (in anticipation of repairs), including ones which have not yet finished serving their useful life. Later on, their restoration will require significantly more time and resources than now.

[Vodopyanov] Igor Vladimirovich, you have thoroughly discussed the situation that has evolved in the Baltic Fleet in particular. But besides other problems, the Black Sea Fleet remains one of the stumbling blocks in relations between two newly formed states—Russia and Ukraine. It is out of this Fleet that the naval forces of these two countries are supposed to be formed following a so-called transitional period. What steps have been taken, and what plans are there for implementing the Yalta and Dagomys agreements on this issue?

[Kasatonov] The Yalta agreement took the Black Sea problem out of the jurisdiction of the RF Defense

Ministry and Navy, and it is now being addressed at the international level. Negotiations are presently under way between state delegations from both interested parties on the principles under which the Black Sea Fleet is to operate in the transitional period. Unfortunately, the Ukrainian side is making demands upon Russia that are unacceptable to its security, which is what is delaying the signing of the documents.

[Vodopyanov] What have been the manifestations of the difference between the positions of the two states during the time of negotiations on the Black Sea Fleet?

[Kasatonov] The main issue in dispute regarding formation of the Russian Navy and the Ukrainian Navy is determining the use of the existing fleet basing system. It must be said that concrete negotiations have not yet been conducted on the use of the Black Sea Fleet basing system in the Crimea in the interests of the Russian Navy. However, judging from what has been said by members of the Ukrainian state delegation, it follows that Ukraine is not interested in providing bases on its territory for the Russian Navy. Thus, the Fleet forces that will be included within the composition of the RF Navy may find themselves in a difficult position: Colossal financial resources and an amount of time greatly exceeding the established transitional period will be required for the construction of new infrastructures on Russia's Black Sea coast.

[Vodopyanov] What does the Russian side see as the solution to this situation?

[Kasatonov] The Navy has developed some proposals jointly with other ministries and bodies of state administration. These proposals have been reported to the Russian president, and they will be used by the Russian Federation delegation in negotiations with representatives from Ukraine. They primarily presuppose use of Sevastopol, historically the main base of the Russian Fleet in the Black Sea, by our Navy. We also hope that the Ukrainian side will certainly fulfill the international agreements that have been reached on the Black Sea Fleet.

But for the moment, unfortunately, the Ukrainian Ministry of Defense is forcibly transferring certain units and subunits of the Black Sea Fleet into its national navy, presently under formation. As of today (June of this year) it has transferred 12 of the Fleet's units and subunits, the patrol escort SKR-112, and ships, vessels and watercraft being built for the North and Pacific Fleets to its jurisdiction unilaterally. This position of the Ukrainian side is destabilizing the situation on the Black Sea.

[Vodopyanov] Regrettable as it may be, we have been dwelling more on the negative aspects of the life of the Navy today. This is understandable: Such are the times, such is the Fleet. But luckily not everything is that bad for us. Consider for example the exhibition of military equipment held in February of this year in Abu Dhabi, about which the press has written a considerable

amount. It showed that our weapons could compete well in the world market. This makes it possible to provide the country with substantial hard currency receipts. Still, there is a "fly in the ointment" here as well. It will obviously not be very easy to regain the positions we lost in recent years in world exports of equipment and weapons. What have deliveries of equipment abroad really done for the Russian Navy, and what benefit could they have, with regard for the results of the latest exhibition?

[Kasatonov] Let me make the qualification right away that sale of military equipment and armament abroad is a prerogative of the Russian Ministry of Foreign Economic Relations. All the Navy does is prepare and transfer the naval equipment to foreign customers, and provide assistance in its repair. For example, in 1992 a diesel submarine was sold to Iran. All the Navy did in this case was to run the acceptance and transfer trials and ferry the submarine to this country. The Fleet also provides assistance in creating the coastal infrastructure needed in support of the basing of ships transferred abroad. We also provide training to foreign specialists.

As far as hard currency receipts from military cooperation with foreign countries are concerned, until last year they went into the state budget. The Navy received only ruble compensation for its expenditures. Beginning in 1992 certain possibilities for us to earn currency for our own needs by participating in the measures I have already discussed appeared. But we can't even make use of these limited possibilities: There are not enough financial and material resources to lengthen the life of equipment, to make it and weapons ready for export, and to supply the spare parts, tools, accessories and T/O property, without which there can be no discussion of deliveries abroad.

As far as the exhibition in Abu Dhabi is concerned, we offered two small submarines for sale, and a large number of foreign clients displayed interest in them. I won't say who specifically, in order to maintain commercial secrecy. If a deal is made, part of the currency receipts, the amount of which will depend on the size of the contract, will be transferred to the Ministry of Defense for the Navy's needs.

[Vodopyanov] As long as we're talking about relations with other countries, I would like to stop on the following issue. Our ships are already practically interacting with naval forces of other states in the fulfillment of international agreements to maintain stability in the planet's "hot spots." What in your opinion are the prospects for further participation by our Navy in such measures?

[Kasatonov] Yes, in 1991-1992 ships of the Navy did take part in joint exercises with ships of a large number of the leading naval powers—ones such as the USA, Great Britain and France. Five out of eight exercises at different levels were conducted within the composition of multinational force groupings with the purpose of

maintaining peace in the Persian Gulf. Our crews gained experience in joint navigation, command and control of the forces and execution of common missions—escorting ships through minefields, landing observation teams and so on.

[Vodopyanov] But you can often hear the opinion today that Russia, and its Navy in particular, is becoming more and more of an appendage to the leading Western states, that it is following them "in their wake," and it appears that such opinions are not without their grounds.

[Kasatonov] There probably is in fact an element of truth in this, considering that Russia is still just beginning to emerge on the ocean as an independent state. Consequently, speaking in the language of the Navy, "yawing" on the course is inevitable. But we cannot forget that sea and ocean lanes belong to all nations. But Russia in its naval policy and the Navy in practical implementation of this policy are striving to make sure that relations on these oceans satisfy universally recognized principles and rules of international law, that they be predictable, and that they be based on mutual trust. And these are precisely the things which joint exercises of Russian naval ships with navies of other countries are promoting.

For example, participation in the multinational naval exercise Galfeks-17 was a qualitatively new stage in the training of Russian naval forces. Five surface ships in the guided missile destroyer and guided missile frigate class and four aircraft carriers of the RF Navy and of the naval forces of the USA, Great Britain and France took part in it. In the period from 2 to 5 March of this year joint artillery exercises against ground and airborne targets were conducted for the first time, air defense and ASW exercise was carried out, and a naval encounter engagement between two surface strike groups was practiced. A high score was given to the actions of the crew of the large ASW ship "Admiral Tributs" representing the Russian Navy.

In order to establish relations of real trust with other countries, Fleet representatives are actively participating in the work of Russian official and unofficial delegations and work groups. Jointly with foreign partners, they are developing unified rules of international law, for example regarding passage of foreign ships through territorial waters. They are attempting to create models of cooperation of the naval fleets of the leading countries in the North Atlantic and Pacific regions, and to solve some perpetual problems of mariners of all the world—rescue at sea, freedom and safety of navigation, and others.

[Vodopyanov] Isn't it true, by the way, that the problem of safety of national marine shipping is rather important today?

[Kasatonov] Quite so. Regions of crisis, which are dangerous to shipping, arise with the inception of local wars, (for example in Libya, the Persian Gulf and Somalia), and when countries make economic claims upon the resources of coastal shelves and certain bodies of water, (such as by the Western Sahara and Argentina). Waters

of seas bathing the shores of Southeast Asia have long been dangerous to civilian vessels due to piracy. In just 3 months of this year there were three attacks upon our vessels in this region, and in 1992 there were 12 instances of fire upon and detention of Russian vessels on all seas and oceans.

A proposal by American and English delegations during negotiations in July 1992, in which Russian representatives also participated, regarding the joint fight against smuggling, the drug trade, and piracy in certain regions of the World Ocean, appears interesting in this connection. We'll probably need to think about organizing special forces in the Navy to carry out such missions.

As far as naval cooperation of the Russian Navy with foreign states in the future is concerned, it will doubtlessly widen.

[Vodopyanov] But that is for the future, albeit not all that remote. For the moment we are talking on the eve of a holiday that is celebrated not only by the Fleet but by all the people of Russia as well—Navy Day. What would you like to wish naval seamen, their families and our veterans at the threshold of this event?

[Kasatonov] You're right when you say that Navy Day is celebrated not only by the Fleet but also by the our entire country. Because, as the almost 300-year history of Peter the Great's offspring shows, the Fleet cannot exist without Russia, and Russia cannot live without the Fleet: if, of course, our state wishes to have an influence on world politics. And on the eve of Navy Day, in these times of difficulty for the entire country, I would like to wish naval seamen, their families, veterans of the Navy, and all who are associated with it one way or another, good health, a cheerful spirit and good seaman's optimism. I'm certain that faithfulness to the traditions of the Russian Navy, patriotism and love for the fatherland will continue to determine the spiritual countenance of naval seamen.

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Official Department: Promotions

94UM0044A Moscow MORSKOY SBORNIK
in Russian No 7, 1993 p 19

[Edict signed by Russian Federation President B. Yeltsin, 9 June 1993, Moscow, the Kremlin: "On the Awarding of Military Ranks to Officers, Generals and Admirals of the Russian Federation Armed Forces"]

[Text] Award the military ranks to the individuals named below:

Vice Admiral

Ivan Fedorovich Vasilyev

Viktor Sergeyevich Topilin

Major-General

Andrey Konstantinovich Belov

Nikolay Ilich Novikov

Anatoliy Yakovlevich Biryukov

Rear Admiral

Vladimir Vasilyevich Agapitov

Mikhail Antonovich Mirko

Aleksandr Aleksandrovich Aleksandrov

Nikolay Vladimirovich Osokin

Anatoliy Antonovich Pasinitskiy

Vladimir Konstantinovich Krasin

Gennadiy Ivanovich Polyukhovich

Nikolay Nikolayevich Malov

[Signed] B. Yeltsin
Russian Federation President
9 June 1993
Moscow, the Kremlin

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Electromagnetic Weapons and Future Naval Warfare

94UM0044B Moscow MORSKOY SBORNIK
in Russian No 7, 1993 pp 35-38

[Letter to the editor by V. Anikin and response by Doctor of Technical Sciences A. Prishchepenko, under the rubric: "Questions of Theory": "Ship Electronic Warfare—the Warfare of the Future?"]

[Text] Dear Editor! I would like to read an article about so-called electromagnetic weapons in your magazine. Just what are they? What are the prospects of their appearance in the navy inventory?

Respectfully,

[Signed] A. Anikin, Moscow

Ship Electronic Warfare—the Warfare of the Future?

Along with other precision-guided weapons systems, new modifications of the Tomahawk cruise missile that were launched from ships were used in the numerous strikes with which the anti-Iraq coalition opened combat operations in the Persian Gulf. These missiles were equipped with powerful radio frequency emitters (instead of high-explosive warheads) that were developed within the framework of "black programs", and were used in the enemy air defense penetration echelon¹ to disable its electronic systems (RES).

For the first time, pulse radio frequency electromagnetic radiation (RChEMI) that had previously been employed as an information carrier, was utilized as a damage-producing element which, while affecting a target,

induces currents and voltages in its electrical circuits in such a manner that semiconductors malfunction from the overloads. In the process, incomparably less energy is required for this destruction than for any mechanical damage. Furthermore, the frequency agility is not capable of parrying the strike of an electromagnetic weapon (EMO), and therefore this strike turns out to be significantly more effective than the impact of jamming on a target. So, the appearance of electromagnetic weapons completes EW's [electronic warfare] evolution from a supporting to a primary type of combat operation, which requires the development of a number of new naval tactics from which the study of the combat capabilities of electromagnetic weapons appears to be extremely important.

Radio Frequency Electromagnetic Radiation as a Damage-Producing Element

The energy that disables the semiconductor elements is actually very small— 10^{-7} joules for Schottky diodes. However, before this energy (in the form of a current impulse) reaches the least durable semiconductor, it undergoes a series of transformations in the circuits of electronic systems. In the process, substantial losses occur. If they are not taken into account, the prediction of the combat capabilities of electromagnetic weapons that are obtained on paper astonish the imagination. However, those people who have served on ships know: It is sufficient to maintain a distance of several hundred meters between ships so that a radar does not "burn up" that same radar on the next ship while radiating power in tens of kilowatts. They also know that the density of the radiated electromagnetic energy is reduced proportionally to the square of the distance and that a very powerful (100 megawatt) source is required to create similar exposure conditions to those described above at a distance of 10 kilometers. But in the process, the exposed radar retains its operating capability and one needs to increase the output already by an order of magnitude of 1-2 in order to render it inoperable. Therefore, we must very deliberately assess the combat capabilities of electromagnetic weapons.

To do that, let us briefly examine the effects of the impact of powerful radio frequency electromagnetic radiation on electronic systems. This data was obtained during the course of verifying the techniques of their electronic protection from the radiation of different frequencies, including under conditions of the impact of the damage-producing elements of nuclear weapons.

Metric and longer waves direct significant electromotive forces (EDS) against the metal case of a piece of electronic equipment, which are also the cause of functional destruction when various elements of circuits and final control elements malfunction. Unauthorized actuation can also be observed for some of them.

Shorter—decimetric meter and centimetric—waves are comparable to the operating wave-lengths of many electronic systems. Under their impact, as a rule, input

channels (for example, mixers) are damaged. However, the effect strongly depends on the mutual orientation of the radiation patterns. Indeed, as differences in wave-lengths increase, the electronic equipment's reception radiation pattern "is smoothed over" and the effect of directivity is substantially reduced.

Millimeter waves penetrate through cracks in screens, maintenance access panels, etc. Input circuits and even specially screened signal processing circuits and onboard computers are often destroyed by these waves.

The effects of the impact of wideband radio frequency electromagnetic radiation are even more varied. Modeling the electromagnetic pulse of a nuclear detonation can serve as an example. Waves that are more than 100 meters long account for up to 90% of its energy. Many items withstand the impact of this component but malfunction if the modeling system creates an adequately steep front of the increase of electrical and magnetic components. The steeper the front, the more shortwave harmonics in the composition of the pulse and, therefore, we think that the impact of the shortwave component on electronic equipment is more effective.

A reliable calculation model of the impact of superpower radio frequency electromagnetic radiation on electronic equipment has not yet been developed; this phenomenon is so complex that only an experiment provides reliable data for its assessment. As a result of research of the impact of radio frequency electromagnetic radiation pulses that have an identical spectral composition but with different power flux densities on electronic equipment of the same type, various effects (unauthorized actuation, breaking tracking, temporary or irreversible failure) have been detected and are evidence of the comprehensive nature of the damage and the presence of several vulnerable circuits in electronic equipment. In the process, the great vulnerability of the most modern items is the rule (from which there are exceptions) because the degree of integration of semiconductors is greater in them and therefore their sizes and resistance to current overloads is less.

So, if electromagnetic weapons take a place in the arsenal of combat weapons, it will become necessary to develop a parametric series of protective elements and to install them on many electronic equipment circuit boards.

Experiments show that the impact on electronic equipment (not only radar but also television, infrared, and other electronic systems) of extra-band [ynepolosnyy] radio frequency electromagnetic radiation results in their becoming disabled with power flux densities from thousands to millions of watts per square meter. At the same time, extra-band radiation cannot be effectively blocked by gas-filled switching tubes because the actuation delay increases to hundreds of nanoseconds in that case.

In some tests, electronic equipment was subjected to the impact of radio frequency electromagnetic radiation with a wave-length within their operating range. In the process, the threshold values of the destructive power

flux density was reduced in contrast with extra-band radio frequency electromagnetic radiation by a factor of several tens, but only in those cases when the emitter was within the target's main radiation pattern lobe. But if that condition was not observed, the corresponding values became higher than for the extra-band radio frequency electromagnetic radiation in similar test conditions.

With identical conducted energy, the thermal effect of the impact on the r-p shift will be greater than the lesser role of heat dissipation, that is, the shorter current impulse is. In calculations (See Fig. 1) equal to one, the KPD [efficiency] of the hypothetical regime of exposure under which the time of generation in the r-p transition of heat is infinitely small.

The cited data are the lower limits of that combination of parameters under which radio frequency electromagnetic radiation is a damage-producing element. However, that combination is also restricted from above. Having abandoned the source, where the possibility exists to increase electrical durability [elektroprochnost] by employing effective insulators, radio frequency electromagnetic radiation is disseminated into the environment, the electrical durability of which also has a limit. The maximum value of the power flux density (Ppr) that still does not cause a disruption of the environment (air) is a restriction that operates on the external border of the source. If it has been exceeded, a disruption will occur and the radio frequency electromagnetic radiation energy will be expended on the useless heating of the plasma surrounding the source. The values of the disrupted power flux densities are cited in Figure 2. We need to artificially increase the size of the too powerful small emitter, increasing the layer of the insulation in the direction of the dissemination of the radio frequency electromagnetic radiation in order for the power flux density to be lower than the disrupted level when it makes contact with its surface. So, the maximum realizable power of the source is closely tied to its dimensions.

This link is dictated by physical limitations and does not depend on technical improvements.

We know that the power flux density is weakened proportionally to the square of the distance from the center of the field of radiation and therefore it is easy to link the characteristic size of the source of radiation (r) with the damage distance (R).

$$R \leq r \sqrt{P_{\text{per}} / P_{\text{nop}}} \quad (1)$$

where P_{per} (second term under the radical sign) is the minimum value of the power flux density that damages that target.

This criteria is valid regardless of whether the radio frequency electromagnetic radiation is dispersed isotropically or gathered in a narrow beam.

Having entered the values of the parameters in the formula (1), we see that with the employment of electromagnetic weapons under conditions of normal atmospheric pressure, the maximum destructive range of electronic equipment exceeds the characteristic size of the radiation source by a factor of 1,000.

The Scientific and Technical Bases of the Development of Electromagnetic Weapons

Traditional emitters (virkatory [as published], gyrotrons, magnetrons, Cerenkov generators, and others) can serve as the basis for the development of electromagnetic weapons for which the following are characteristic: The concentration of radiated energy in a small solid angle and, a small (10%) dispersal of the frequencies in the spectrum of the radio frequency electromagnetic radiation being formed. The very narrow beam of radio frequency electromagnetic radiation, in which the power flux density significantly exceeds breakdown density.

Figure 1. The function of the energy efficiency of the exposure regime on time of impact on the target of the radio frequency electromagnetic radiation stream.

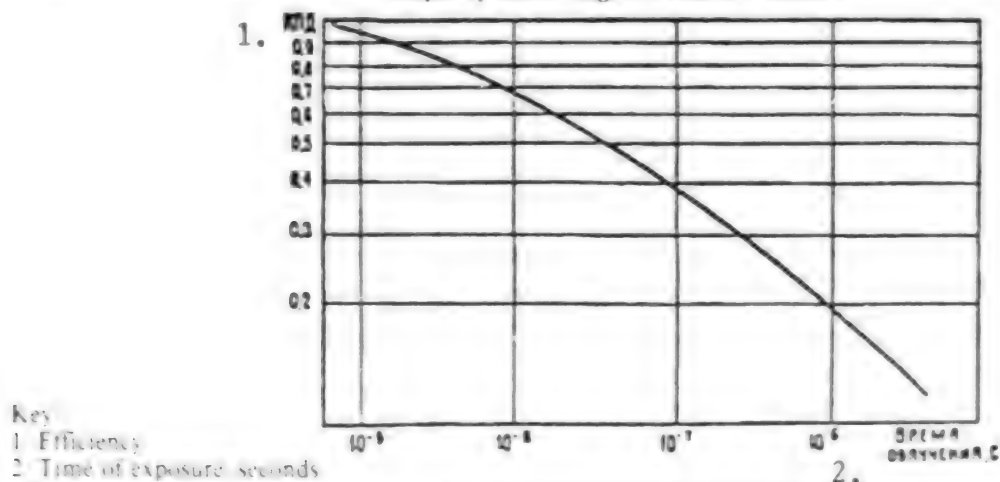
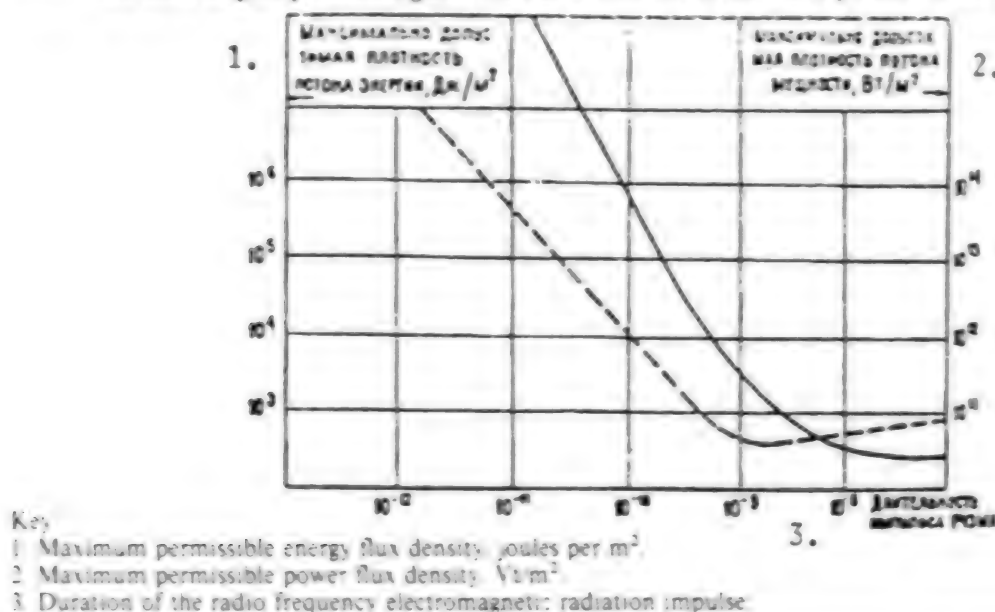


Figure 2. The function of the maximum permissible power flux density and energy flux density from the duration of the radio frequency electromagnetic radiation current in the air with a pressure of one atmosphere.



can "pass" through the plasmoid created by it. In the process, the small beam is "excited" even more (although at the cost of substantial losses of energy in the formation and heating of the plasma) but this phenomenon is observed for comparatively prolonged (microsecond) and therefore ineffective pulses of radio frequency electromagnetic radiation (see Fig. 1).

Significant (up to a megavolt) operating voltages are needed in traditional sources of electromagnetic energy for effective electronic emission. The need to ensure electrical durability leads to an increase of the dimensions and, therefore, to the reduction of the corresponding characteristics. Specific energy output of the radio frequency electromagnetic radiation totals several tens of millijoules per liter. Indeed, traditional emitters permit reuse

Sources in which the formation of radio frequency electromagnetic radiation occurs when the magnetic field is compressed have significantly higher average specifications. An impact-wave emitter, a magnetic-burst [vzryvomagnitnyy] frequency generator and a super-conductor magnetic field impact wave oscillator that were recently developed permitted us to obtain average energy output of radio frequency electromagnetic radiation up to 10 joules per liter. The following are characteristic for these sources: Practically isotropic distribution of the radio frequency electromagnetic radiation stream formed in space; and, a wide (several decades) radio frequency electromagnetic radiation frequency range. Energy supply is carried out with a high-current pulse (hundreds of kilampères) with low voltage (tens of kilovolts).

The two indicated classes of sources are substantially differentiated by emitter, size and operating specifications. Therefore, the conceptual bases of the weapons systems that could be developed based upon them will be differentiated. Obviously, traditional generators can be employed as fixed directed sources (NI) equipped with guidance systems. The isotropic nature of the radiation and the small dimensions of the sources based on a compressed magnetic field make possible their delivery by existing types of platforms and the utilization of a radio frequency electromagnetic radiation current that is formed to compensate for a failure that permits them to be viewed as the basis for developing electromagnetic munitions (EMBP).

Two Concepts for the Employment of Electromagnetic Weapons

Inflicting functional destruction is a specific feature of the impact of electromagnetic weapons that does not always turn out to be sufficient in an actual combat situation. So, a PKR (antiship missile), while continuing its flight with a disabled homing head at a close distance (1 km) from the target, but with an undamaged airframe, engine, warhead and proximity fuze, will still destroy a ship. If the homing head is disabled at a distance of 3-5 km, guidance errors accumulate and the probability of hitting the ship becomes low.

The combat effect from employing electromagnetic weapons is caused by the specific impact of radio frequency electromagnetic radiation as a damage-producing element exclusively on an electronic system. It is manifested more completely when the electronic system has a more substantial role in the given combat

situation. Electronic systems play a most important role in combat at long distances and also in maneuvering types of combat. Situations in which the employment of electromagnetic weapons is possible without coordinating with weapons assets are more characteristic for a defensive engagement: In order to avoid being hit, it is sufficient to "blind" the antiship missile for a few—tens of seconds. If the ship has been damaged by electromagnetic weapons, but enemy weapons systems do not immediately "reach" it, its crew can replace even irreparably disabled units of electronic systems and continue to fight.

An electromagnetic weapon will not be able to completely replace weapons systems and the choice of weapons systems on ships of the future is a choice between competing technical solutions.

Let's compare the specifications of electromagnetic weapons, while examining both the concept of directed sources and also electromagnetic munitions, from the point of view of their competitiveness with weapons systems that carry out similar combat missions. For directed sources, an assessment based upon formula (1) provides for normal atmospheric pressure of an extra-band directed source of radio frequency electromagnetic radiation with a characteristic size of one meter and a range of functional destruction of electronic systems within one km. This is less than the range at which an artillery mount, also with a barrel length of approximately one meter, having opened fire in time, blows the target to smithereens. An increase by a factor of 3-7 (proportionally one over the square root of P_{por}) to the destruction range is achieved through the use of band radio frequency electromagnetic radiation (the frequencies of the source and the target coincide). However, this increase is provided at high cost. It can be attained only when the radio frequency electromagnetic radiation beam has coincided with the target's main reception lobe; that is, when the powered source (NI) is near the homing head in the lock-on mode. This signifies that the greater part of the powered sources on escort ships will be helpless to assist the main targets of their protection and the choice of powered sources as the primary PVO [air defense] weapons will entail obvious damage for strike potential. In the process, it is unclear how to determine the operating frequency of a seeker head with passive guidance and we will not at all be able to destroy such targets at an increased distance, since it is technically impossible to tune powered sources (for example, infrared) in their operating frequency range. So, the number of combat situations that permit the realization of heightened destruction ranges of electronic equipment with band radiation is extremely limited.

Of course, we could reduce the powered source destruction distance to tens of kilometers but by increasing the characteristic size of the radiation to tens of meters. In the process, the devices to service it will inevitably increase (a source of such a power class that has been developed in the United States weighs tens of tonnes). You probably won't find too many ships where you can install this system and

its platform will certainly become a priority target for the enemy. We must not ignore the difficulties of guaranteeing its safe functioning both for the electronic equipment of our own ship and for ships of the task force: It is theoretically impossible to develop an emitter that has been deprived of radiation pattern side lobes and, if the radio frequency electromagnetic radiation of the main lobe destroys electronic equipment at 10 km, the side radiation lobes are entirely capable of "blinding" our own electronic equipment at distances that are a thousand times less. These conceptual questions are not yet finding convincing answers. Therefore, today a comparison of the combat properties that take into account such factors as effectiveness and destruction range, universality of employment and dimensions, do not provide grounds for the conclusion on the substantial advantages of directed sources as compared to weapons systems, all the more so that the destruction ranges cited above using directed sources are only theoretical assessments.

If you examine the isotropic distribution of the energy of a damage-producing element, the prediction for the employment of electromagnetic weapons is more favorable. A 130-mm high-explosive fragmentation projectile reliably destroys antiship missiles during a detonation no farther than five meters from it. Electromagnetic munitions of those same dimensions will "blind" its homing head at a distance that is greater by more than an order of magnitude. This is confirmed by assessments based upon the formula (1): At a source radius of six cm, you can attain a destruction radius of 60 m. There is a series of experimental data on full-scale models of electronic equipment with various operating principles that confirm this assessment.

Therefore, at this stage, we can assert that electromagnetic munitions have significantly greater capabilities for compensation for a miss than a munition that destroys a target with a shock wave and shrapnel. Furthermore, the introduction of electromagnetic munitions can make a number of types of electronic warfare systems unnecessary. And finally, electromagnetic munitions still have a number of advantages. Based upon their dimensions, electromagnetic munitions are suitable for employment in many shipborne weapons systems. They can be utilized in a salvo at a range that is determined only by the capabilities of the platforms and compensation for a miss and the increase of the impact on a target is attained by increasing the number of munitions in the salvo.

Moreover, the presence in electromagnetic munitions of a significant (up to 1.2 by volume) quantity of explosives permits it to be utilized for the effective engagement of a target in extreme circumstances.

If we now compare directed sources with electromagnetic munitions, the former do not have a greater portion of the indicated properties. Furthermore, the cost of just one expendable element of an energy-supplying directed source (a magnetic-burst generator) is practically equal to the cost of an entire electromagnetic munition and, if you consider that combating group targets is the most

important mission of ship air defense, narrowing the beam of radio frequency electromagnetic radiation reduces the effectiveness of combating precisely those targets. We must also take into account the limited "rate of fire" of directed sources at the same time that the employment of an electromagnetic munitions screen against group targets provides a super effect, thanks to the impact of the pulse duration on each target.

Thus, employment of pulse radio frequency electromagnetic radiation to combat targets which functionally consist of electronic systems is quite promising and, at the present time, the maximum effectiveness of this new damage-producing element can be realized with the isotropic dissemination of its energy in space.

Footnotes

1. Defense News, 1992, Vol 7, No 15, p 1

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Naval Aviation: Causes of Crew Errors

94UM00454 Moscow MORSKOY SBORNIK
in Russian No 7, Jul 93 pp 44-48

[Article by Lieutenant Colonel V. Kolnogorov, candidate of technical sciences: "Identifying Causes of Naval Aviation Crews' Erroneous Actions"]

[Text] Ensuring flight safety of naval air systems is one of the main problems facing aviation equipment developers and the organizations and line units which operate aircraft. Much attention is given to solving this problem, but lately there has been no qualitative improvement in the level of flight safety. This is connected with many factors, including a cutback in resources allocated to support combat training.

Under the conditions at hand, Naval Aviation is seeking the reserves necessary for ensuring the requisite level of flight safety. One such reserve is to improve the methods base of flight safety services. This method is rather effective and requires no great investments.

It is common knowledge that one direction of providing methods support to flight safety is to analyze the accident rate, discover causes giving rise to unusual flight situations, develop and implement measures for preventing air mishaps, and also improve the design of methods aids. The need for expanding methods work in this direction is confirmed by statistical data on flight safety both here and abroad, which show that over half of air mishaps occur because of erroneous crew actions. The causes of these actions lie in elements of incongruity of component parts of the ergotechnical system (which the "crew-aircraft-medium" is) manifested under certain flight conditions.

Elements of such incongruity can occur on the one hand because of errors, compromises and miscalculations made in creating the aircraft, and on the other hand because of insufficient professional skills of the crew as well as of persons supporting and controlling flights. Therefore, the requisite level of functional coordination of the "crew-aircraft-functioning conditions" ergotechnical system must be achieved both in stages of creating naval air systems as well as when forming professional qualities of aircraft crews (Fig. 1).

Fulfilling this condition is a fundamental direction of the "Concept for Preventing Air Mishaps," whose scope includes the task of mastering a methodology for reducing accidents which considers the role in it of human and personal factors. The essence of these factors in functional coordination of the "crew-aircraft-functioning conditions" ergotechnical system lies in achieving the following:

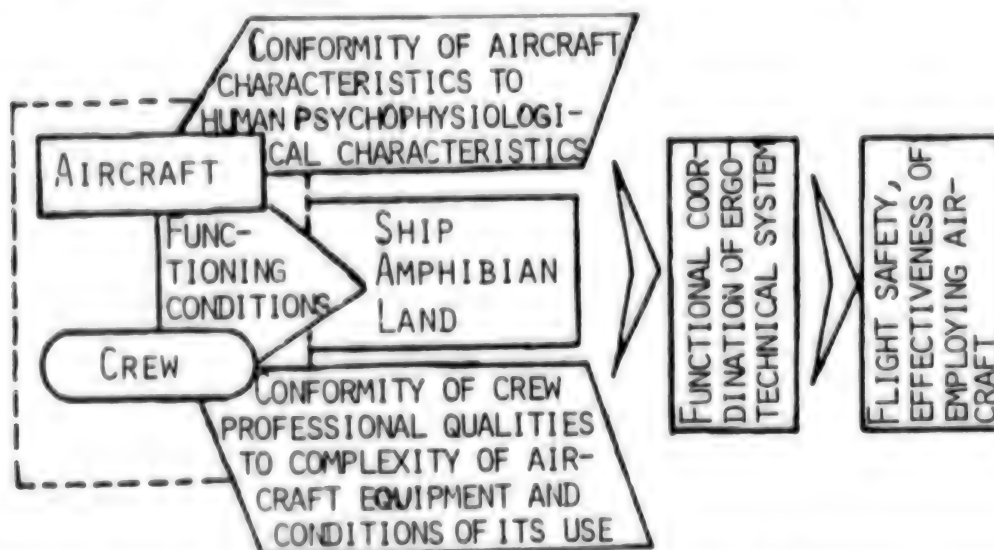


Fig. 1. Qualitative direction of the effect on flight safety of the level of conformity of ergotechnical system elements.

- conformity of aircraft characteristics and conditions of their use to human psychophysiological characteristics and capabilities (reflecting the essence of the *human* factor);
- conformity of aviation equipment complexity and conditions of its use to professional qualities, i.e., to the level of a crew's functional, physical, psychological and other training (reflecting the essence of the *personal* factor).

Based on this, an assessment of the human factor's role in an analysis of air mishaps and preconditions for air mishaps permits separating pilot fault from error caused by the aircraft's technical imperfections. Unfortunately, up until now, guidance and information documents on flight safety often have used the "human factor" concept in the broad meaning of the word. This occurs because of insufficiently developed assessment methods, as a result of which the personal factor (lack of training, lack of preparedness, lack of discipline and so on) often is given as the human factor. This leads to situation where incomplete data on accident causes enter the flight safety information retrieval systems of interested scientific research establishments, which hampers accounting for shortcomings of aviation equipment in creating aircraft.

It is proposed to use the following principles to identify and take into account elements of functional incongruity

of component parts of the ergotechnical system (role of the human and personal factors) in causes of accidents:

1. Invariance of general statistical signs of the presence of the human factor in unusual flight situations, including the following:

- frequency of appearance of unusual situations (air mishaps, preconditions for air mishaps);
- identical nature of conditions, of characteristics of onboard equipment, and of the nature of manifestation of unusual situations;
- appearance of unusual flight situations independent of flight personnel qualification and experience;
- recurrence of unusual situations despite preventive measures.

2. Invariance of general statistical signs of the presence of the personal factor of a flight, including the following:

- characteristic of one category of flight personnel;
- dependence on preventive measures (education, training and conditioning), which produce a stable result in terms of lowering the number of unusual situations;
- dependence on individual features of flight personnel.

3. Conformity of human and aviation equipment characteristics, including the following:

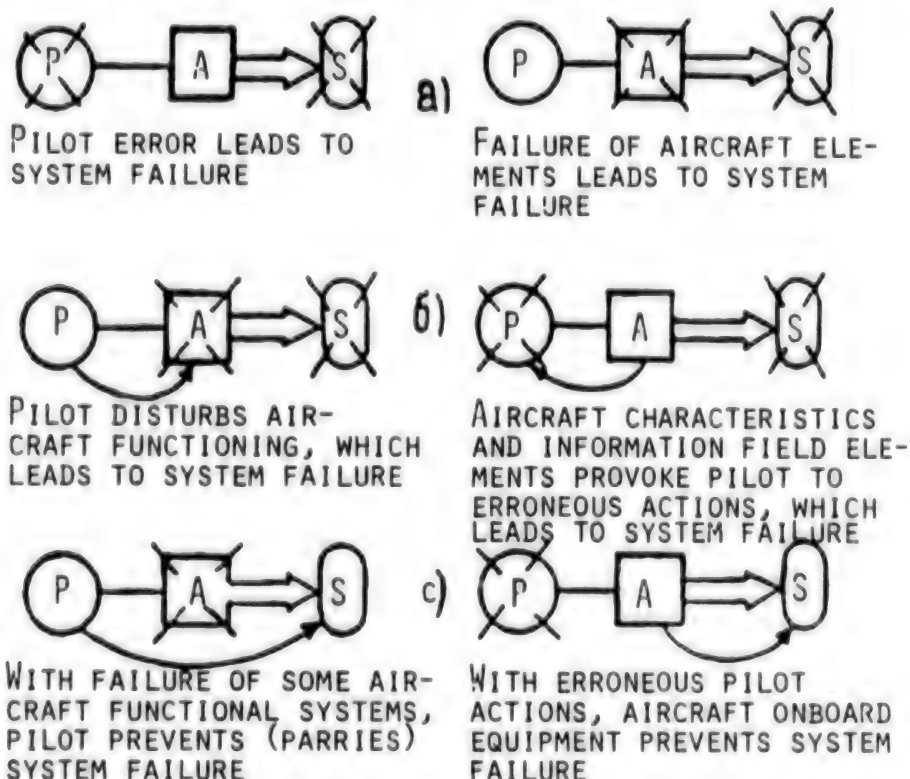


Fig. 2. Variations of effect of the "pilot-aircraft" ergotechnical system elements on a flight's outcome.
(Key: P—pilot; A—aircraft; S—system)

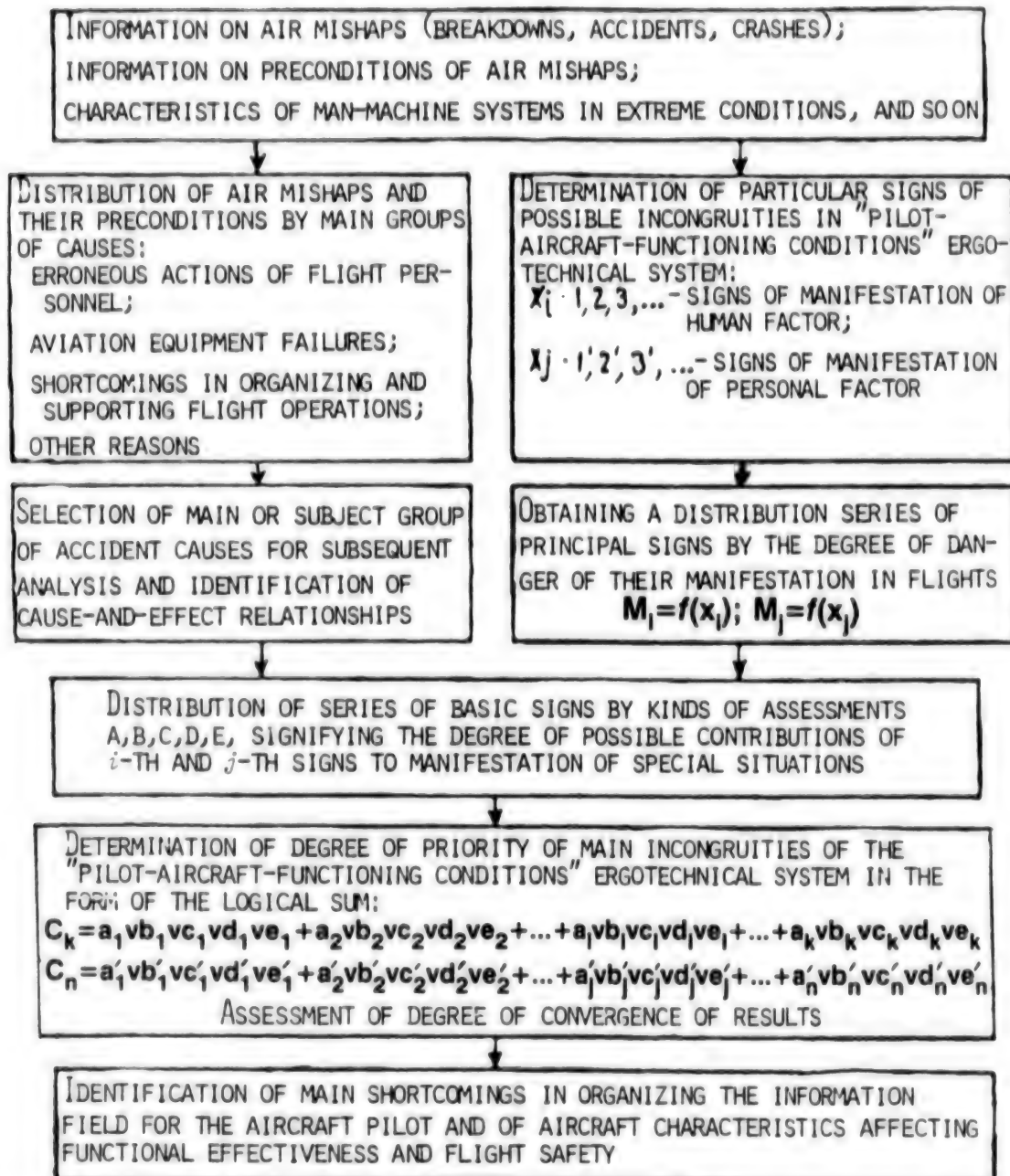


Fig. 3. Sequence in identifying main causes of aircraft accidents.

- assessment of the conformity of the pilot's decision and subsequent actions to the situation at hand;
- determination of the conformity of characteristics of the information field formed for the pilot to the structure of algorithms of his activity;
- determination of the conformity of algorithms of a pilot's activity to his psychophysiological capabilities;
- assessment of the degree of deviation of a pilot's psychophysical and physiological indicators from values characterizing his normal psychophysiological state.

To identify basic signs of incongruity of ergotechnical system elements in accordance with the first and second principles, there must be a series of statistical data on the nature, conditions of appearance, manifestation, and so on of unusual flight situations. The third principle is used to identify specific incongruities between aircraft characteristics and man's psychophysiological characteristics under specific functioning conditions.

SIGNS OF INCONGRUITY IN "CREW-AIRCRAFT" ERGOTECHNICAL SYSTEM	DEGREE OF A SIGN'S INFLUENCE ON AMOUNT OF MANIFESTATION OF SPECIAL SITUATION IN FLIGHT (KINDS OF ASSESSMENTS)				
	VERY HIGH	HIGH	MEDIUM	LOW	NEGLIGIBLE
	A	B	C	D	E
1/1	K_1/K'_1	K_1/K'_1	K_1/K'_1	K_1/K'_1	K_1/K'_1
2/2	K_2/K'_2	K_2/K'_2	K_2/K'_2	K_2/K'_2	K_2/K'_2
3/3	K_3/K'_3	K_3/K'_3	K_3/K'_3	K_3/K'_3	K_3/K'_3
...
i/j	K_i/K'_j	K_i/K'_j	K_i/K'_j	K_i/K'_j	K_i/K'_j
...
K/n	K_n/K'_n	K_n/K'_n	K_n/K'_n	K_n/K'_n	K_n/K'_n
	$\sum_{i=1}^K K_i = 1$ $\sum_{j=1}^n K'_j = 1$	$\sum_{i=1}^K K_i = 0.75$ $\sum_{j=1}^n K'_j = 0.75$	$\sum_{i=1}^K K_i = 0.5$ $\sum_{j=1}^n K'_j = 0.5$	$\sum_{i=1}^K K_i = 0.25$ $\sum_{j=1}^n K'_j = 0.25$	$\sum_{i=1}^K K_i = 0.01$ $\sum_{j=1}^n K'_j = 0.01$

Kinds of assessments for determining the degree of priority of main incongruities in the "crew-aircraft-functioning conditions" ergotechnical system.

Using these principles, to study the influence of component elements of an ergotechnical system on a flight's outcome (Figs. 2a and 2b, air mishaps; and 2c, preconditions for air mishaps) permits approaching a determination of the most characteristic causes of the appearance of unusual situations. These principles can be made the basis of a methodology for determining the priority of causes of aircraft accidents, represented in Fig. 3 in the form of a specific sequence. Assessing the degree of priority of particular causes of accidents permits determining the most effective preventive measures aimed either at improving aviation equipment or at improving the personnel training system.

In accordance with the sequence shown, unusual situations are distributed by groups of causes using statistical and analytical indicators (relative number of air mishaps or preconditions for air mishaps for the i -th cause, probability of air mishaps for the i -th cause and so on). The main group of causes of aircraft accidents or the group of interest to the analyst is chosen according to the size of values of these indicators. The possibility of analyzing a particular unusual situation which occurred in flight is not precluded.

If erroneous actions of flight personnel are examined as the main group of accident causes, then in the next stage the priority of existing incongruities of the ergotechnical system in the cause of unusual situations is assessed i.e.,

the role of human and personal factors in air mishaps (or preconditions for air mishaps) is determined. But the effect of these factors is interconnected and interdependent, and so first the particular signs of possible incongruities in an ergotechnical system are determined.

For example, the following are particular signs of the human factor in a generalized form: Unsatisfactory anthropometric characteristics of the cockpit, information display system, controls, and conditions of activity (limited time reserve, need for simultaneous operation of several controls and so on); as well as features of flying techniques and so on (1,2,3,...i,...,k). The following are particular signs of the personal factor in a generalized form: Poor pilot preparation for flight operations, scornful attitude toward performing the flight mission, a state dictated by the danger of making a flight, elements of fatigue and of mental and physiological discomfort, and so on (1,2,3,...j,...,n).

The manifestation of particular signs during the functioning of ergotechnical systems has a varying degree of danger in flight, which is determined in advance for each sign. Values obtained are distributed by kinds of assessments signifying the degrees (a,b,c,d,e) of possible contributions of signs to the appearance of unusual situations, represented in the form of a standards table. A sum of values of computed degrees equalling one (1) will correspond to a very high assessment (a) of the manifestation of signs in an unusual flight situation.

Such a table is used to determine the degree of priority of a particular kind of incongruity C_k , C_n of ergotechnical system elements in an unusual situation. To this end, it is possible to use the Delphi method. To apply it to a particular unusual situation (or set of unusual situations), a group of experts indicates only the kind of assessment for each attribute in the submitted questionnaires. Questionnaire forms are similar to the standards table, but contain no numerical values ($K_1, K_2, \dots; K'_1, K'_2, \dots$) of the degree of a sign's possible contribution to a situation's appearance.

The most preferable kinds of assessments and their spread intervals are selected in processing the data obtained. Data with a lesser spread are obtained after 2-3 iterations and compared with the standards table. The comparison permits determining numerical values of all kinds of assessments of signs in question according to their contribution to the unusual situation being analyzed. The degree of priority of a particular kind of incongruity is determined on this basis, for example,

$$C_k = K^a_1 + K^a_2 + K^a_3 + \dots + K^a_n + \dots + K^a_m;$$

$$C_n = K^b_1 + K^b_2 + K^b_3 + \dots + K^b_n + \dots + K^b_m.$$

After the validity of results is assessed, specific shortcomings in organizing the information field for the crew are identified, as are the aircraft and ergotechnical system characteristics and professional qualities of flight personnel affecting flight safety.

In accordance with the sequence shown, an analysis was made of causes of the air mishap of a coaxial-rotor helicopter which occurred in the Northern Fleet Air Force in 1992. It happened at night during an approach to land on a ship. Statistical data on Naval Aviation air mishaps for the last five years were examined to identify possible causes. Their analysis showed that such air mishaps occurred earlier. Based on the presence of general statistical signs in causes of flight personnel's erroneous actions (recurrence, similarity of functioning conditions, not dependent on crew skill level and so on), the greater manifestation of the role of the human factor draws attention, although there also are signs of manifestation of the personal factor in causes of accidents.

In order to choose the main direction and within its framework take appropriate measures to ensure flight safety, an assessment was made of the priority of the role of identified factors in causes of similar air mishaps. Results of the assessment, shown in Fig. 4, showed that in the air mishaps examined, priority of the human factor proved higher than that of the personal factor. This attests to the need to take measures aimed first and foremost at improving aviation equipment and also at improving the system of preparing crews for flight operations over the water's surface with a takeoff from and landing on a ship.

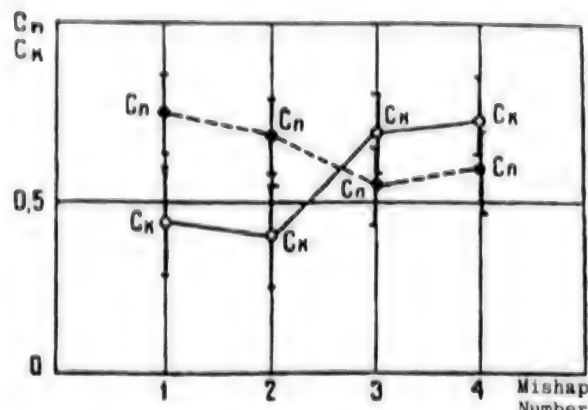


Fig. 4. Distribution of value of priorities of the role of human and personal factors in causes of accidents in four air mishaps of coaxial-rotor helicopters.

Further analysis proposed to identify specific functional incongruities in the ergotechnical system which contributed to the appearance of erroneous pilot actions. As applied to the air mishap in question, an unusual situation began to develop when the helicopter was on the glide path 1.5 km from the ship. In shifting his gaze from instruments to the space outside the cockpit, the pilot got an illusion of the ship being close and of increased speed and flight altitude on the glide path. These illusions began to predominate over the model of the aircraft's spatial movement retained in his consciousness. The pilot's controlling movements which were formed on the basis of these sensations proved erroneous and led to the air mishap.

In addition, it was discovered that a helicopter's flight condition in a transition to slow speeds has a number of features influencing a pilot in forming controlling effects.

Flying a helicopter at high speed ($V > 100$ km/hr) corresponds to a higher degree of coordination of component parts of the "pilot-helicopter" ergotechnical system. In these conditions the structure of pilot actions is essentially the very same as in flying an aircraft. The logic of his actions coincides with aircraft behavior. In these conditions a pilot essentially does not use the collective pitch stick; he makes only a certain power setting adjustment. The pilot's psychophysiological capabilities are fully sufficient for instrument flying in this condition.

A different picture in a pilot's activity arises at slow flight speeds ($V < 100$ km/hr). In these conditions, the degree of functional coordination of component parts of the "pilot-helicopter" ergotechnical system drops. This occurs because in flying the helicopter the pilot uses the collective pitch stick and the power adjustment control in addition to the cyclic stick and pedals; i.e., flight altitude and speed can be changed with three controls. That situation leads to ambiguity between the status of the helicopter and position of controls. In this case it is considerably more difficult to balance the helicopter. It is extremely difficult

to fly on instruments. The stereotype of control, logic of actions and aircraft behavior change compared with a flight at high speeds. It becomes hard for a pilot to "hold onto" or "gather in" the instrument needles, since over five sources of data on flight parameters and power settings must be monitored. This leads to a drop in precision of flying and increased probability of erroneous actions due to a pilot's limited capabilities to adapt quickly to a flight condition at slow speeds.

In this situation, a desire objectively arises in the pilot to fly the helicopter according to key reference points outside the cockpit, which helps ease flying tasks. But under conditions of a flight over the sea, especially at night, flying based on visual reference points gives a pilot an illusory perception of the aircraft's spatial location. Flight safety of helicopters decreases as a result.

An analysis of these air mishaps shows that as applied to helicopters, the problem of the form in which data are presented to the pilot has not yet been resolved definitively. The presently existing form, in combination with the logic of operating helicopter controls, does not provide the requisite level of functional coordination of component parts of the "pilot-helicopter" ergotechnical system in all stages of a flight or in the full range of speeds.

But helicopters are in operation and must be mastered by personnel. Shortcomings allowed in developing and creating the helicopter because of existing S&T capabilities, miscalculations, compromises and so on are partially compensated by the training, preparation and drill of

flight personnel and by other measures. A special role in methods work must be set aside for this.

Strengthening the methods base of the flight safety service presumes research into physical phenomena characteristic of the appearance of unusual situations and development of measures for preventing an aircraft from entering unauthorized zones and for exiting these zones. Results of this research must be formalized periodically in the form of methods aids. Material structured on an analysis of a specific situation is perceived better and permits increasing the volume of knowledge on flight safety problems. It has been established in practice that a pilot's knowledge of the features, capabilities and limitations of the aircraft he is operating, and also of external conditions, largely determines the safety and effectiveness of its use. Otherwise, erroneous actions will arise, leading either to nonfulfillment of a combat mission or to the appearance of unusual flight situations.

The examined direction in identifying causes of the appearance of unusual situations does not contradict existing approaches to identifying the chief, immediate and accompanying causes of accidents. This direction permits discovering shortcomings which reduce the level of flight safety in a strictly consistent, substantiated manner and in greater detail. It can be used accordingly for implementation of requirements for "Concepts for Preventing Air Mishaps" in identifying and accounting for the role of human and personal factors in unusual flight situations.

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BALTIC STATES

Butkevicius on Mutiny Incident, Future of Armed Forces

944K0107A Vilnius LIETUVOS RYTAS in Lithuanian
14 Oct 93 pp 1, 3

[Interview with Audrius Butkevicius, minister of national defense, by Ramune Sakalauskaite: "Resigning from his Duties, the Minister of National Defense Told About the Incident with SKAT—the Voluntary National Defense Service: Only Several Shots and Coffins with Flags Were Lacking for the Creation of a Complete Myth"]

[Text] The statement of resignation by National Defense Minister Audrius Butkevicius was to be considered in President Algirdas Brazauskas' office today. Resigning from his ministerial duties, Butkevicius agreed to answer the questions of LIETUVOS RYTAS.

[Sakalauskaite] Is it normal for a minister of national defense to go abroad when his subordinates are raising a mutiny?

[Butkevicius] The incident at the Voluntary National Defense Service took place when I was already abroad. When I go away, my deputies remain with concrete authorization and duties.

There was no mutiny in the national defense system. This is a problem of a criminal character, involving several people, one of many unsolved social, economical and juridical problems against the background of the national defense system. Later attempts were made to endow this with a political character.

[Sakalauskaite] However, the people in the forest of Pakaune included not only, according to your Deputy J. Gecas, volunteers in their hearts, but also regular workers of the Voluntary National Defense Service (SKAT).

[Butkevicius] Actually, everything started with them. First a little private business, by taking advantage of the official position, and later on, to justify that activity—a legend was created about the fight against the Mafia. They started creating a myth that the "volunteers in the forest" were a continuation of the Lithuanian partisans who fought against the occupying power. If there are partisans, then, obviously, occupiers-communists must also exist. As one of the members of the parliament said: "Can't you see that a new political situation exists in Lithuania?"

It is interesting that the forest was chosen. After all, these days it is much more convenient to hide and to fight in the city. But in the city it would become clear who is who and the elements of mythology would disappear.

The subsequent statement made by the Lithuanian political parties and the activity of the parliamentary commission also served the myth about a resurrection in

Lithuania. A "reliable group" came about—it had the possibility to negotiate with the "insurrectionists" and was the only body "capable of preventing bloodshed." Everything was happening according to a classical scenario. Even a small newspaper, with a circulation of 8,000, went into action. It was shouting loudly about the insurrection embracing the entire territory of Lithuania, about mutiny and political demands. All that was missing was several shots and coffins decked with flags. The result would have been achieved—the Voluntary National Defense Service would have been totally discredited (the idea of a National Guard would have been compromised), Lithuania's possibilities for establishing military contacts would have been made more difficult, the development of a system of defense would have been made more complicated, and several aged boys would have entertained the fantasy that they were making policy.

[Sakalauskaite] How would you describe this situation?

[Butkevicius] On such occasions, I usually ask myself—is this mere stupidity or a provocation? I think that both components were in play—the provocateurs using fools.

Those who follow the events in the former Soviet Union can see how conflicts are utilized in the attempt to restore the empire, and who is assuming the role of the gendarme or, as the fashionable saying today goes, of a protector of peace. The mechanisms of these conflicts are stunningly similar and we should not light-mindedly believe in the fairy tale about the "slow Lithuanian character," that we are "cold-blooded northerners," and that the events happening elsewhere would not reach us. The ten years of postwar resistance indicate something entirely different. The provocateurs know that.

[Sakalauskaite] You had mentioned earlier that you would testify about the incident in the SKAT Kaunas unit only in the procurator's office. Have you already been invited to testify?

[Butkevicius] Not yet. I think that this is not my personal business, but a state matter.

[Sakalauskaite] While answering the questions in the parliament, you mentioned the name of Algirdas Patackas. Why did you do so?

[Butkevicius] Mr. A. Patackas publicly introduced himself on television as a "messenger of the people in the forest."

[Sakalauskaite] Does the mention of A. Patackas from a parliament rostrum indicate sarcasm, or information based on concrete facts about his activity in organizing the incident in the SKAT Kaunas unit?

[Butkevicius] Can one speak about Mr. A. Patackas and his behavior without sarcasm?

[Sakalauskaite] What are the reasons for such a determined resignation from the national defense minister's post?

[Butkevicius] Just as earlier I did not consider myself solely a physician, so now I do not think that it is only as a minister that I am worth anything. What I have been doing has been a marvelous opportunity to get to know and to fulfill oneself by serving the state. Today I feel this possibility is about to end.

When 85 percent of each working day is spent by putting out the intrigues by the members of parliament, organizing unending check-ups, and explaining to mothers what had spoiled their children's manners, one realizes that one can work freely in such a post only with political power and support behind you.

On the other hand, I feel that one stage of the work we had started has been completed: A foundation has been laid for a defense system, the Russian Army has been pulled out, the necessary links with the foreign countries have been established. Now we must move to another stage—strengthening and tuning. To accomplish that properly, a political power is needed.

[Sakalauskaite] But in the elections to the parliament your name was on the list of the National Progress Movement.

[Butkevicius] As you know, the National Progress Movement has failed to enter the parliament.

[Sakalauskaite] Does that mean that after the defeat of the National Progress Movement in the parliamentary elections, you decided to withdraw from it?

[Butkevicius] The National Progress Movement has not been registered again and is not functioning. Political power does not reside in a list. Either the society supports it, or not.

[Sakalauskaite] Can you mention any concrete examples showing that the people in the government have distrusted you?

[Butkevicius] This is also a question of political backing. A political team is traditionally interested to see each of its members acquiring greater influence. In my case, the Parliament's National Security Committee has been very frequently speaking about "muzzling the minister." These, however, are only surface matters.

[Sakalauskaite] Would a strong political backing solve your problems?

[Butkevicius] Yes. A politician without political support harms himself and others.

[Sakalauskaite] How did it happen that during several years all the threads of army management got to your hands, while the General Staff became a secondary institution?

[Butkevicius] This is how it should be. In a democratic society, military men obey civilian leaders and act as advisers during the adoption of decisions; later they execute these decisions. The military people do not make

policy. The Staff presents possible alternative solutions, details plans and controls their realization.

If the ruling political party trusts the minister, it must be happy that he is holding everything in his hands. If, on the contrary, it distrusts him, then it appoints a second individual who acts as his double.

[Sakalauskaite] Do you think that Russia's events may repeat themselves in Lithuania?

[Butkevicius] I do not think that the Russian model may repeat itself in Lithuania. However, as I understand it, the events in Russia are not over and they will influence the situation in our state in various ways. The blood that was split in Moscow may only have an effect as a catalyst.

[Sakalauskaite] How would you comment the charges heard in the Parliament that J. Gecas had been dismissed from his duties as the SKAT chief of staff not in accordance with the statutes?

[Butkevicius] J. Gecas wrote a statement which was then complied with. As for the charges you have mentioned, I would call them ravings by people who have not read the statutes. According to the statutes, the officer addresses his superior, who may grant or reject his request.

[Sakalauskaite] What do you think of the possibility to replace an army of draftees with one of the professionals?

[Butkevicius] I think that in creating Lithuania's defense system, we must balance three principles: Duty, hire and civic initiative (voluntary service). We must have some purely professional military units and a sizable number of well-trained professional soldiers. But we are not going to solve all the defense problems this way. On the other hand, a well-functioning peacetime defense system is a great school not only for defense purposes, but also as a potential instrument of education.

[Sakalauskaite] On the basis of what principles did you select your personnel when you came to head the ministry? And what is the hiring system now?

[Butkevicius] We started almost under underground conditions. Many of today's militant patriots did not pay much attention to our department and therefore we had to be content with those who came themselves. Such a situation continued practically until the end of the August coup. The main leaders of the present system came in the first days. I was not closely acquainted with anyone of them, except for Colonel A. Vaitkaitis, who was in charge of the military department of the Kaunas Institute of Medicine. I met all the others in Vilnius.

Now we have a search system. We have jobs and we are ourselves looking for people to fill them. We have several schools—a school for non-commissioned officers, a center for the training of border guards, an officers' school, a SKAT training center. Some specialists are being prepared in the above-mentioned schools.

[Sakalauskaitė] Members of the parliamentary National Security Committee have a receipt for the purchase of 5 thousand automatic ACM rifles. However, the sum of money spent for those weapons is not indicated. The state control department writes in its conclusions that 198,770,000 rubles in cash were allotted for the purchase of the weapons, but there is no invoice for the money paid. Is the purchase of weapons without indicating the sum a tradition in the national defense system?

[Butkevicius] I can only confirm that regarding the purchase of the weapons you had mentioned, their price was much lower than on the international market. All the necessary documents exist. They have been submitted to the State Control Department and to the Government.

[Sakalauskaitė] This year, following an audit at the National Defense Ministry by the State Control Department, "considerable violations" were discovered. The conclusion was that because minister A. Butkevicius and his deputy S. Vasiliauskas were negligent in using budget funds not in accordance with their purpose, they should, in accordance with the established financial economic violations of discipline, transfer 57.9 million talonas, 2 thousand U.S. dollars, and one thousand German marks to the state budget. This matter has been transmitted to the procurator's office. What is your comment about these facts?

[Butkevicius] These are the sums that should have been returned to the state budget at the end of the fiscal year. However, they were used to buy the necessary equipment. Throughout the year, the Finance Ministry ran into debt to the Ministry of National Defense and transferred the funds only at the end of the fiscal year. That is why their acquisition was late.

The State Control Department audited the Ministry of National Defense as many as four times. The last audit was completed and a conclusion was made on April 15, 1993. The procurator's office checked the data and found nothing criminal. On April 15, 1993, the Government accepted the account of the Ministry of National Defense on the measures taken to make good the shortages and to punish the transgressors.

[Sakalauskaitė] What is the connection between your resignation and the conclusions made by the State Control Department?

[Butkevicius] The same as between the characters of Krylov's fable—the perishing lion and a donkey that is kicking it. The audit was made half a year ago and everything was settled, but this theme is being exploited at the present moment.

[Sakalauskaitė] With whom was it easier to work—with the Sajudis or the LDDP majority?

[Butkevicius] Work was not easy. The problems I have encountered and keep encountering were and remain the same: a non-state point of view regarding national defense. Therefore I see no difference between the Sajudis and the

LDDP people. I am seeing the same unwillingness to resolve these problems on an appropriate level.

[Sakalauskaitė] What will you do after your resignation as minister?

[Butkevicius] I want to discover how the states of the world are solving the questions that we have to resolve. Therefore I shall be studying and learning.

[Sakalauskaitė] Are you planning to remain in politics?

[Butkevicius] Without any doubt.

[Sakalauskaitė] In which field?

[Butkevicius] In my view, the most important problem for Lithuania today is the unfinished formation of the most important state institutions. In many areas there are no "rules of the game." The state as a system is not yet functioning. In many areas a state policy still does not exist—it does not exist until it is recorded. And yet "political parties" are waging an energetic fight among themselves, although it is difficult to distinguish their programs one from another.

I would like to remain a politician whose attention is focused on the creation of the state. I was never interested and still have no interest in the traditional balance of the "left" and of the "right" in politics. And, to tell the truth, I am not satisfied the political forces that represent that bipolar equilibrium. The most important question for me is how to create a state that would manage to survive and develop. And, at the same time, how to protect the individual, the citizen, the businessman from its dictates. I will search for my own way.

Audrius Butkevicius was appointed general director of the National Defense Department on March 23, 1990. He became a member of government on October 10, 1991. During his year in the government he acquired a four room apartment, an automobile that was originally put at Prime Minister Kazimiera Prunskiene's disposal, and a daughter.

Political Conflicts Affecting Lithuanian Armed Forces

93UM0062A Moscow KRASNAYA ZVEZDA in Russian
28 Oct 93 p 2

[Article by Vladimir Urban, Valeriy Gromak: "Sejm No Longer Expecting Russian Tanks: 'Barricade' Passions Shift to Lithuania's Own Army"]

[Text] The National Defense Service numbers about 11,000 full-time personnel, of whom 10,200 are servicemen, including 1,100 officers.

According to Ministry of National Defense figures published this past summer, the field army division "Gelezinas vilkas" ("Iron Wolf")—the ground forces' primary unit—has 3,200 servicemen, among them 200 officers. The Air Force is to have an establishment strength of 610 servicemen (40

percent staffed), the Navy 480 servicemen (80 percent staffed), and the state border protection service 5,400 servicemen (85 percent staffed).

'Forest Brothers' II

Symbols are always deceiving. After the tragic events of January 1991 in Vilnius, the republic Supreme Council decreed that the barricade surrounding the parliament would not be dismantled until the "occupation troops" left Lithuania. Although the new Sejm, in which a majority of the seats are held by leftists, rescinded that decision, all the politicians were united in their demand that our troops be withdrawn.

The Russian side, even though a basic state-to-state treaty had not been concluded (although this was discussed initially), relocated its divisions in accordance with the timetable signed in September of last year, which is to say by August 31 of this year. But not even a month had gone by when a real threat to the security of Lithuanian society arose. A group of servicemen from the 226th Company of the Kaunas district of the Volunteer National Defense Service retreated into the forests, taking 133 assault rifles with them. The latter-day "Forest Brothers" attributed their actions to poor social protection for servicemen and their dissatisfaction with their commanding officers—former Soviet Army officers.

But it was later learned that that was merely a pretext. The fact is that the rebellious volunteers' leader, Jonas Maskvitis (during the events of January 1991 he was the personal bodyguard of then Supreme Council Chairman Vitautas Landsbergis) had been dismissed from the Volunteer National Defense Service in July, when criminal proceedings were instituted against him for "exceeding authority." Several other members of the rebel group had also been detained by police for illegal sales or possession of weapons before retreating into the forest; they had been released after signing pledges not to go anywhere.

And what about the other "rebels"? They joined Maskvitis after the company was visited by politicians allied with Landsbergis. All the volunteers' demands were printed out on a computer in Kaunas, and the document was taken into the forest for signatures by none other than Algirdas Patalskas, a member of the right-wing opposition in the Sejm.

It is no accident that Minister of National Defense Audrius Butkevicius said at the time that the conflict in Kaunas represented yet another spiral in the struggle between the right-wing opposition and the left-wing majority in parliament, and that attempts were being made to draw the army into that conflict. The Sejm, which had begun to look into the matter, is now keeping silent. And the volunteers who emerged from the forest immediately fell into the "embrace" of law-enforcement agencies for the crimes they had committed earlier.

Lone 'Nonpolitical' Goes to College

Butkevicius's other response to the Kaunas events was to announce his resignation. But in September Prime Minister Adolfas Slezevicius did not petition the president regarding Butkevicius's resignation, saying that the minister was coping with his responsibilities.

Butkevicius, a psychiatrist by profession, entered politics as one of the organizers of Sajudis—the Lithuanian independence movement. In March 1990 he became general director of the national defense department, and when the ministry was established in 1991 he became its minister, a post he has held ever since. Even after Sajudis lost the parliamentary and then presidential elections to the Democratic Labor Party, Butkevicius remained in that post in six governments. There was one reason for this: Regardless of the circumstances, the minister remained committed to the constitutional precept that the army was to stay out of politics.

But in September, certain commentators maintained that there were also other reasons for Butkevicius's desire to leave military affairs. Specifically, they cited his differences with parliament over how to develop the armed forces. Deputies to both the former Supreme Council and the current Sejm have never bothered to consider the national security concept submitted by the Ministry of National Defense 18 months ago. One could also cite the unsatisfactory financing of the army, which the government owes 9 million lits in connection with recent obligations alone. All told, the defense department's budget deficit this year is 22 million lits.

Because of its lack of funds, Lithuania is still unable to buy two missile boats from the Russian Baltic Fleet, even though all the required international formalities were taken care of long ago. Butkevicius himself admitted in a conversation with KRASNAYA ZVEZDA correspondents that an "officer in the Volunteer National Defense Service earns less than a cleaning woman in any other ministry."

And so it is not surprising that the top military official soon returned to the question of his resignation and has now (on October 18) personally submitted his resignation to Algirdas Brazauskas. Butkevicius is declining to comment on the matter. And the president, apparently in order to avoid further political discussion of this topic, said in an interview with Lithuanian radio that the minister's departure stemmed from his intention to go to London for study. "That's an understandable aspiration for a young man" (*he is 35 years old—the authors*), said Brazauskas in conclusion. "And he will probably leave in the near future."

If Someone Comes, Someone Leaves.

One official of the Volunteer National Defense Service gave us a totally unexpected reason for Butkevicius's departure—namely, the appointment of Colonel Jonas Andriskevicius to the post of Commander of Lithuanian Forces.

Andriskevicius was born in 1944. He graduated from the Leningrad Higher Combined Arms Command School and the M.V. Frunze Military Academy. He served as chief of staff of a motorized rifle regiment in the Siberian Military District, as a military adviser in Ethiopia, and, from 1984 to 1991, as head of the military department at Vilnius State University. He was promoted to colonel in the Lithuanian Army.

The problem is that Andriskevicius recently held the post of chief of the Volunteer National Defense Service training center. And that is where the revolt occurred. Therefore, Butkevicius justifiably opposed a new appointment for the colonel. Nevertheless, the president submitted that nomination to the Sejm for confirmation (and immediately after the incident in Kaunas). And when the deputies finally supported Brazauskas's proposal, this coincided with Butkevicius's resignation. (The unexpected nature of Andriskevicius's nomination is indirectly confirmed by the outcome of the voting: 57 deputies voted in favor and three against, while 32 members of parliament abstained, thereby confirming that they had no strong opinions about the colonel.)

The reaction to these events has also been mixed within the military itself. Lieutenant-Colonel Sarunas Vasiliauskas announced his intention resign as deputy minister for rear services and supplies. His resignation was followed by those of 10 other high-ranking officers of the ministry and the armed forces staff from the National Defense Service. "Our army, even before being recreated, is already about to collapse," wrote one Vilnius newspaper of the situation.

Your Bases Became Our Bases, But Soon They Won't Belong to Anybody.

After the withdrawal of Russian troops, the young Lithuanian Army expected to acquire ready-made deployment sites. But even this matter has yet to be resolved at the state level. A telling example of this is the Northern Compound in Vilnius, where the 107th Motorized Rifle Division had been stationed. It was turned over to local government bodies—in order to be converted into a future commercial center. In the meantime, the compound isn't even being guarded, and everything is being carried off. The fate of the airfields at Siauliai and Panevezys has yet to be resolved.

But even if the Ministry of National Defense is taking control of our former bases, this still doesn't mean that there will be order there. Russian military officials turned the military installation at Keleriskes (about nine kilometers from Kedainiai) over in perfect condition, something that is acknowledged even by local government officials. But judging from newspaper reports, the Volunteer Service guards themselves have begun carting off engines and copper cable from the base. The Vilnius newspaper LETUVOS RITAS, for example, writes that the guards, too lazy to gather firewood in the forest, are fueling their stoves with doors removed from the buildings. And a great many such examples can be cited.

It is no accident that independent experts now agree that given this kind of attitude toward former Russian property, the Lithuanian government is going to have to simply rebuild the military bases within a couple of years. It is

noteworthy that while Butkevicius predicted just a few months ago that Lithuania would at last be able to speak of a real security system within two to three years, prior to his resignation he moved that prospect back to five or six years.

But foreign military specialists are even less optimistic. For example, General Jorgen Ling, commander of the Danish National Guard, who recently paid an official visit to Vilnius, said that in his opinion, it will take Lithuania another five to 10 years to build its own army.

All this suggests that military development in the republic has encountered serious difficulties.

Retired Soviet General Arrested in Lithuania

94UM0065A Moscow KRASNAYA ZVEZDA in Russian
4 Nov 93 p 3

[Article by Valeriy Gromak: "Law or Political Bias? The Latter Dominates in Lithuania..."; First paragraph is KRASNAYA ZVEZDA introduction]

[Text] In the second half of September, the Lithuanian Special Services arrested Major General of the Reserves Ginutis Taurinskas. They accused him of sabotage.

Maj-Gen Taurinskas was chairman of the DOSAAF [Voluntary Society for Cooperation With the Armed Forces] of the Lithuanian Republic and now he is suspected in the antistate coup of 1991 and of trying "to induct Lithuanian youths into the Soviet Army by force." Kastis Vagneris, representative of the press center of the General Procurator's Office of Lithuania, reported that the major general does not acknowledge his guilt and asserts that he was carrying out orders from Vladislav Achalov, then deputy minister of defense of the USSR.

I know the general well. In Lithuania, he was considered to be a respectable and law-abiding citizen. A prison cell has now been prepared for him.

Taurinskas and thousands of other people have been put in this position by politicians who were offering the choice: Observe the laws of Lithuania, which had declared its independence, or follow the demands of the Constitution of the USSR, to which the former president of the Union and general secretary of the ruling party had called them. The general chose the latter course and became a "criminal." In the same class were the former workers of the Lithuanian Communist Party Central Committee, business manager Nikolay Gribov and instructor Sergey Reznik. The Lithuanian Procurator's Office found a crime in the actions of Gribov and Reznik. In 1991, the CPSU took under custody the property in Lithuania that was considered to belong to the party during the time of the existence of the Union. But under the laws of independent Lithuania, it seized state property with the help of armed force. It is a matter of the building of the Lithuanian Communist Party Central Committee, a publishing house, and printing warehouses. The warehouses contained a considerable quantity of materials, paint, and newspaper

paper. As business manager, Gribanov had control of these assets. Reznik carried out the directives of the authorities.

Valeriy Ivanov, leader of the Lithuanian organization "Unity" has been languishing behind bars in Lithuania for two years now. Professor Ivan Kucherov, who worked in the Communist Party Central Committee of Lithuania, was arrested a few months ago. It is hard to say what awaits them.

Certainly the Lithuanian system of justice decided to set a precedent and try two members of the OMON [Detachment of Special-Purpose Militia] in absentia. The General Procurator's Office turned over to the Supreme Court a criminal case in which Boleslav Makutynovich, former commander of the Vilnius OMON, chief of staff Vladimir Razvodov, and chief inspector Aleksandr Sklyar are accused of establishing antistate organizations. Aleksandr Sklyar was arrested but later released under a large bond. Makutynovich and Razvodov are not in Lithuania.

At the same time, observers in Lithuania and justice authorities are forced to acknowledge that a mafia is raging in the republic. Its latest notorious action was the assassination of the deputy editor of the newspaper RESPUBLIKA next to his house in broad daylight. But the arm of the Lithuanian Themis [Greek god of justice] does not reach out to investigate specific crimes. Clearly it is easier to pay tribute to political biases rather than to the law.

CAUCASIAN STATES

Zviadists Occupy Khoni, Samtredia

94UM0039B Moscow KRASNAYA ZVEZDA in Russian 19 Oct 93 p 3

[Report by Vitaliy Alekseyev and Kirill Petrov: "The 'Zviadists' Have Taken Khoni and Samtredia, and Discord Seems to Have Appeared in the Georgian Army's Command Element..."]

[Text] On 17 October forces loyal to former President Zviad Gamsakhurdia occupied the cities of Khoni and Samtredia and cut Batumi off from Tbilisi following fierce fighting. Georgia's capital has enough food left for 2 weeks, and the loss of Poti and the blockade of Batumi reduced the chances of replenishing the supply practically to zero.

The "Zviadists" are endeavoring to develop their success, and positional battles are already underway in the area of Kopitnari (until recently an airfield of Russia's Air Forces was located there) 20 kilometers from Kutaisi. It was reported to KRASNAYA ZVEZDA at the headquarters of the Group of Russian Forces in the Transcaucasus that the situation in western Georgia is making it impossible to withdraw the 35th Motorized Rifle Regiment from Kutaisi to Russia by the target date of 1 November. Captain Viktor Reshetnikov of the 35th Motorized Rifle Regiment was killed by a sniper's bullet on 16 October in the area of Khoni in an armored column en route to Batumi.

It would be difficult to call the actions taken by the Georgian Army's command element adequate to the situation which has developed in the western part of the republic. Not until after Samtredia had been lost did Major-General Georgiy Karkarashvili, minister of defense, issue the order to "place the units and subunits on readiness I status." One other order issued by him is confusing, to put it mildly. He ordered the disbandment of the national guard, which was restored literally a few days ago by an edict of Eduard Shevardnadze, attributing this action to a desire to strengthen one-man command in the army. The Minister of Defense was supported... by Major-General Dzhemal Chumburidze, commander of the national guard. What about Eduard Shevardnadze? The chairman of the parliament and chief of state declared that the decision was subject to mandatory implementation by all.

DEFENSE INDUSTRY

Conversion at Arzamas-16

94UM0041/B Moscow KRASNAYA ZVEZDA in Russian
14 Oct 93 p 2

[Article by KRASNAYA ZVEZDA correspondent Mikhail Rebrov: "The Nuclear Bomb and Conversion Dialogues and Reflections in Arzamas-16"]

[Text] This is not the first year that the word "conversion" is on everyone's lips. There are discussions, arguments, mutual reproaches and even threats. The defense sector is attacked, it lashes back, internal and external opposition continues, and conversion proper is bogging down, with the tremendous production capacities of the "mailboxes," classified plants, and restricted-access combines failing to effect a rejuvenating infusion into the country's economy. Alas, this is so. At least for the present. Why is this so?

An answer to the "why?" is being sought by many. It would appear that, with so many efforts being exerted, it is time to arrive at an understanding of the situation (even though the complications are profound) and cease our aimless wandering in labyrinths. But no. Realizing that there are several aspects to the solution, ones that are reasonable and carry their own logic, we stubbornly push on, attempting to make everyone fit into the same pattern. This includes ammunition plants, tank plants, facilities manufacturing radioelectronic equipment, and those producing weapons-grade uranium and plutonium.

Take for example the Russian Federal Nuclear Center (VNIJ [All-Union Scientific Research Center for Experimental Physics]). This is the largest scientific and design complex in the country, and it possesses considerable scientific and technical potential and powerful experimental and manufacturing facilities. It is capable of utilizing its capacities for the development and production of equipment in the interests of various national economic industries. And it is doing that. But

I have had the opportunity of meeting many "defense people": Directors of scientific production associations, chief designers, chief executive designers, and heads of ministries. They expressed various opinions on conversion problems. This is not surprising, since thinking people examine a problem from various viewpoints, realizing that not much can be accomplished by striving for mere uniformity. However, there are a number of areas where their views do converge.

"To arrive at an understanding of the consequences of conversion," said Federal Nuclear Center Chief Designer Stanislav Voronin, "it is necessary to bear in mind at the very outset that the task is far from simple. To effect a resolution, it is necessary to develop a clear understanding of the fundamental differences between defense industry production and that of the civilian sector. Neither a market system nor central planning can

bring about a rapid and effective realignment of personnel, equipment, and major production assets of defense sector enterprises for the purpose of manufacturing civilian items before we resolve definite problems surfacing in the transition period. We cannot, without making investments, merely wave a magic wand to transform, say tank or missile plants, into profitable enterprises which would turn out consumer items, transportation vehicles, and other necessary products."

A person cannot help but agree with the above. In addition, it should be kept in mind that weapons production is associated with the application of the most advanced technologies. That is why conversion cannot be shifted to less sophisticated technologies.

"It would be naive to assume," remarked Aleksandr Bugrov, an official of the marketing service (which does exist in Arzamas-16), "that conversion can be realized by the mere efforts of scientific centers, plants, and KBs [design bureaus]. Major civilian sector projects are everywhere financed by the government, and this being the case, there is little point to expect that state-created defense enterprises can be realigned by the efforts of enterprises alone. Here, it is important to find the proper ratio between the microeconomic and the macroeconomic processes."

Once again the question, What should this ratio be, and why is it so hard to determine it? Vladimir Belugin, director of the Federal Nuclear Center, has his ideas on the subject.

"There is yet another consideration, one possibly paradoxical, that is associated with conversion. The task is not quite as difficult if we move away from the euphoria and do some sensible thinking, if we accomplish strategic - let us call it that - planning far effectively, organizing large-scale realignment of personnel, equipment, and the major production facilities from a military to a civilian footing. But there can be no standard decisions applied here. The scientific and technical potential accumulated over the years can be destroyed by hasty and ill-conceived approaches. This process progresses rapidly; we will be able to effect restoration - if this is possible - only after many years."

So those are the considerations. They may differ in some way or other, but in the main there is no major divergence. Nonetheless, the pain has not been done away with. On the contrary, the problems which at first did not seem to be too substantial are now making themselves felt.

"It is often assumed - at least by economists - that scientific workers, theoreticians, experimenters, and designers are not concerned with the nature of the products resulting from their work. This assumption is fundamentally untrue," reasoned Academician Yuriy Trutnev. "If a person does acknowledge it to be true, then it is necessary to go a step further to conclude that these workers are people lacking something. Are we not all aware of the consequences of our efforts, and do we

not bring our efforts to fruition? Sometimes it is said that we receive money only for creating nuclear weapons, and, this being the case, we do want disarmament and are hindering conversion. What nonsense! Yes, the world should become nuclear-free. But how do scientific experiments fit in here? And, in general, one cannot be naive. Look at what is going on beyond our borders."

Of course, conversion should further the cause of strengthening security. Conversion is a process which follows disarmament and which simultaneously promotes disarmament; it does not become a jumping-off point for launching a new phase of an arms race. It does not make sense to destroy some weapons systems while at the same time develop others which are more deadly. The impossibility of winning a nuclear war is clear to everyone today, but... This "but" is associated with the sad reality of our world. The United States has not abandoned its course of stockpiling of weapons. These are not the old ones covered one way or another by various international agreements, but fundamentally new weapons. It has an explanation for that: The interests of the country's security. It would appear that, to some, security is of vital importance, while to others it is...

Vegetius, the military theoretician of ancient Rome, once said, "If you desire peace, make preparation for war." This popular expression applies to the centuries-old attempts to prevent aggression by means of military force, maintaining peace by creating powerful weapons and threatening to use them, and the occurrence of numerous wars (of which there have been more than 200 in the 20th century alone), which are continuing under conditions of nuclear catastrophe. Perhaps the time has come to recall the words of A. Einstein, a brilliant and creative thinker of our century: "It is not possible to make preparation for war while at the same time attempting to prevent war."

I expect someone to levy the criticism: That is mere words. That may be so. But let us return to conversion. Many modern scientific centers and enterprises of the defense sector are characterized by narrow specialties, employing specialized technologies, special raw materials and semi-finished products, which complicates their realignment for the manufacture of civilian goods. In addition, the personnel of NIIs, KBs, and plants in the changeover to civilian production may lose certain advantages, particularly funding of salaries and priority in obtaining financial and material resources.

Also, we must acknowledge that military research and development furthers scientific and technical progress. It is no secret that it has been instrumental in introducing

innovations into aviation, space science, computer technology, materials science, and other areas.

"The destructive effect of explosives, of highly various kinds, may be completely controllable and produce a substantial effect," contributed Vladislav Mokhav, doctor of physical and mathematical sciences and a specialist at the Arzamas-16 Nuclear Center. "Explosions can be employed to create new materials that are needed in the national economy; effect considerable strengthening of metals; cut enormous pieces of metal of complex shape; carry out welding; and create artificial water reservoirs. The use of VV [explosives] in the defense complex has created efficient fire extinguishing equipment that can be applied in civilian industry. MHD (magnetohydrodynamic) generators and explosively driven magnetic field generators employed in the defense complex offer enormous prospects for the resolution of purely peacetime tasks."

The above list can be continued. Since quite a number of examples of actual conversion worthy of study and dissemination exist at the present time, it is necessary to convince the government and legislative bodies that in this process an important role is to be played by experimental programs that make it possible to verify and refine our ideas on conversion. This will bail us out of serious problems associated with shrinking military budgets. In this connection, there is no point whatsoever to put off these programs until the actual costs exceed by many times the anticipated advantages. And they must be initiated at once. We must move away from euphoria and do sensible thinking.

I cannot exclude the possibility that the considerations listed above may be controversial to some people. However, controversy begets the truth. And, although we have yet to come up with a clear conversion strategy, excluding political considerations, there does exist an economic reality, which in the heat of arguments and "historical" solutions is somehow forgotten. Alas! In our country other "major" campaigns have transgressed in this regard: From the "corn boom" and "general robotization" to "universal temperance." The efforts came to naught. So an ill-conceived and hasty conversion can exacerbate rather than revitalize the economy, and we can wind up lacking both guns and butter.

I wish to let the words of Stanislav Voronin, chief designer of nuclear and thermonuclear weapons, serve as the conclusion of my comments.

"The time has come to take stock, catch our breath, and calmly analyze the results of conversion attained in the last 5 years. We have made quite a number of mistakes. We cannot continue to apply the trial-and-error method, for time is short and the cost of making errors is too high..."

'Clinton Doctrine': Pentagon Interference as Peacekeeping*94UM0039A Moscow KRASNAYA ZVEZDA in Russian 19 Oct 93 p 3*

[Article by Colonel Sergey Pechurov, candidate of military sciences: "Pentagon Engages in Implementation of 'Clinton Doctrine'"]

[Text] American politicians believe that in the situation of increasing instability in various regions of the world, the probability of U.S. military intervention in events smaller than full-scale war will grow. This is confirmed also by the basic tenets of the new U.S. military doctrine, the so-called "Clinton Doctrine." The Pentagon intends to coordinate this intervention with military operations of the UN and other international organizations (NATO, WEU [Western European Union], CSCE). Consideration for the national interests of the USA, however, is the main factor determining whether such actions, referred to as "peacekeeping," are to be taken.

The office of training and scientific research for the organizational development of the ground forces (Fort Monroe, Virginia) has rapidly developed several versions of a special manual, FM 100-23 ("Peacekeeping Operations"), which are to serve as a guide for the U.S. Armed Forces in this specific area of action. Corresponding provisions, articles and chapters were simultaneously inserted into other manuals and regulations for the American military, primarily FM 100-5 ("Operations"), the basic U.S. military manual.

The Americans are carefully studying their own experience in "establishing order" abroad, as well as the UN's military peacekeeping experience. The operation conducted by American Armed Forces in Cuba in 1906-1909 is now considered to be the first peacekeeping action by the U.S. National Armed Forces. The Americans have also designated their operations in Lebanon in 1958 and the Dominican Republic in 1965-1966, their participation as part of the international force in Beirut in 1982, and other "peacekeeping" operations. With respect to the Pentagon's participation in such operations under the UN flag, there have also been plenty of these. Furthermore, American military personnel and U.S. Armed Forces did not have the smallest role by far in many of them—in North Korea in 1950-1952, for example.

We have already stated that the Americans place low-intensity conflicts which do not reach the scope of a full-scale war in the category of peacekeeping actions. The Pentagon therefore breaks such actions down into operations for maintaining peace, establishing peace, restoring peace and enforcing peace.

The first three kinds of operations can be termed non-combat operations since they involve relatively passive action for purposes of observing and monitoring armistices and restoring conditions which existed prior to the outbreak of military action. The very name applied to

the fourth contains a certain offensive and resolute, even aggressive, element. This has actually been demonstrated by the American participation in the peacekeeping operations in Iraq and Kuwait, and in Somalia.

After assigning its Armed Forces the not entirely natural role of "peacekeepers," the U.S. military leadership directed the unit and subunit commanders to prepare to execute it. Taking into account substantial differences between the two aforementioned groups of peacekeeping operations, it is planned to prepare units and subunits to carry out both groups of operations.

Training for the first, noncombat, role includes such features as acquiring skills in setting up buffer zones, monitoring cease-fires and armistices, guarding borders, conducting negotiations, clearing mines, rebuilding infrastructures, patrolling, and providing humanitarian assistance. The second, combat, role involves an area more usual for military personnel: Training for landing operations, disarming warring parties, breaking up militant demonstrations and rallies, restoring territorial integrity, and protecting national minorities. And while the first group of operations provides for using only light firearms for self-defense, the employment of heavy weapons is not prohibited in the combat peacekeeping operations.

At the same time, the American experts stress that in reality circumstances could frequently develop in such a way that it would be necessary to switch from non-combat to combat operations and vice versa after peacekeeping operations are underway. The action in Somalia is cited as an example, which began with the rendering of humanitarian aid to the population but developed into armed confrontations between the "peacekeepers" and local opposition groups.

The American command element also considers it highly probable that subunits and units assigned to peacekeeping forces may be switched from certain command structures to others—from the UN to the CSCE or to NATO, for example, and vice versa. In general, though, the American experts believe that at the present time the management and direction of peacekeeping operations can best be organized under either the UN or NATO. Both organizations have extensive experience in directing multinational military forces.

There is one difficulty, however. By tradition, American troops must be directed by American commanders. Apparently, if the U.S. leadership and public opinion are convinced that a given, specific operation is totally in keeping with the nation's strategic or economic interests, then this problem too will be eliminated.

The Americans proceed from the premise that the specific nature of peacekeeping operations requires a certain amount of time and effort to prepare the units and subunits assigned to execute them: A minimum of 4 to 6 weeks of intensive exercises and individual training. It is felt that, given the high level of training of U.S. Special Operations Forces, their mobility, knowledge of the

language and orientation towards various geographic areas, they are the best prepared to conduct actions of this kind. In any case, it is recommended that these forces be used in the initial stage of such operations, subsequently transferring their functions to other units and subunits.

A recent Pentagon report on the restructuring of the U.S. Armed Forces concludes that extremely large military forces could be involved in peacekeeping operations: An airborne and a light infantry division, a Marine expeditionary brigade, one or two airborne assault groups, one or two composite air wings of air forces, subunits of

special operations forces, and logistical subunits. The total numerical strength of peacekeeping groups of U.S. Armed Forces could reach 50,000.

The Pentagon is demonstrating a readiness to engage in decisive intervention under the guise of "peacekeeping" for settling regional conflicts, not so rare today, either independently or interacting with the armed forces of other states, including Russia's. In this situation, will the U.S. be able to resist the temptation to impose its own will and formulas for resolving international problems, primarily those satisfying its own interests? That is the question.

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